Gleanings in Bee Culture

Vol. XLIII JANUARY 15, 1915 No. 2

The "New" Garden Magazine for 1915

Plans have been perfected for 1915 which will make the GARDEN MAGAZINE even more practical to the progressive amateur gardener than ever before. It may well be called the "new" GARDEN MAGAZINE. New plants, new flowers, new vegetables during 1915 will be brought before the notice of readers as quickly as the facts are available.

Special Features for 1915

Roberta of Roseberry Gardens

By Frances Duncan
The Author of "The Garden Doctor"

This is more than a mere romance hung around a garden. It is chock full of practical garden facts, dealing with the relationships of the nurseryman and the amateur who buys from a nursery.

The Garden Plan Every Month

The editors have secured the co-operation of competent authorities in garden design for the preparation of a series of what may be called typical layouts, one of which will be published in each number during the coming year, and will deal with plots varying in size from the city lot to several acres. Suggestive ideas will be given for the development of the property, shrubbery to be used, borders, etc.

In the Greenhouse

A series of timely, practical hints for the amateur who has a small greenhouse.

The Month's Reminder

Tells the amateur and beginner what to do and what pitfalls to avoid.

The War on Bugs

A new kind of spraying calendar which will cover in an entirely new way from a practical gardener's point of view, how to combat with pests and diseases in all parts of the garden.

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These subjects are treated from the home point of view. There is an essential difference between growing fruit for market and for one's own table. The Garden Magazine point of view is the home exclusively.

Picture Feature

With the new cover of The Garden Magazine, opportunity is given for plant portraits, presenting them in full color. Watch the cover each month for plant portraits of real interest.

In their proper season numbers will be prepared with special reference to the particular needs of the moment, i. e., "Planting on Paper," "Seed Sowing," "Spring Planting," and other planting specials.

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VOL. XLIII. JANUARY 15, 1915 NO. 2

EDITORIALS

While this issue is being read by our readers, the editor will be down in the Dismal Swamp looking after our bees. Possibly he will be disappointed in finding colonies have not made the progress we had hoped. What we find, however, will be given in our Feb. 1st issue.

"Many a Slip 'twixt the Cup and the Lip."

One or two letters from the vicinity of Norfolk, Va., indicate that the climate may prove to be somewhat disappointing to us, and that Hampton Roads Bay has been covered with ice at times. But where our bees are located is quite close to the ocean, some eight or nine miles from the coast, warmed by the Gulf Stream. Some of the colonies that we sent to Virginia were very weak, and we may lose some this winter. If so, our readers shall have the truth.

"The Development of the Apple from the Flower."

We have for free distribution a folder entitled "The Development of the Apple from the Flower," by Prof. O. M. Osborne, Head of Horticultural Department, State Normal School, Lewiston, Idaho.

Under the sub-heads, "How the Honeybees Fertilize the Blossoms," "Why the Apple-blossom is Entirely Dependent on the Bee for its Fertilization," "How the Flowers and the Bees Co-operate for Each Other's Good," and "How Many Colonies of Bees are Needed for the Proper Development of an Orchard?" Prof. Osborne deals with every phase of the question, and shows conclusively that, without the bees, there will be no fruit, as the wind cannot pollenize the apple-blossoms.

We shall be glad to send these folders to individuals making application, for one cent to cover postage. Or we will send them for distribution postpaid in lots of a dozen or more through societies if the name of the society with its secretary and president is sent us together with the number that can be used.

Small Pocket Electric Lamp for Looking in at the Entrances of Indoor-wintered Colonies

Did you ever try any thing of this sort? They are far better than a lantern, because they enable you to shoot the light clear up between the frames where the bees are clustered. Whether bees are wintering well or otherwise in the cellar, their condition can be easily observed with a pencil of light such as one can get from these little lamps.

There has recently been put on the market a very convenient electric lantern that makes use of a standard dry cell, such as one can buy at the telephone offices or any automobile garage for 25 cents. While it is much larger and more bulky, it does not have to be used on the flash-light principle. Indeed, the current can be turned on and left on, because it is big enough to stand the load. These cost complete about two dollars. We are using one of these in our bee-cellars with much satisfaction.

A Carload of Beekeepers from Chicago to the National Convention at Denver, February 16, 17, and 18

The editor of Gleanings expects to be present at the Denver convention, where he hopes to have the pleasure of meeting his friends and patrons. An effort has been made to make up a carload of beekeepers at Chicago and go in a body. The following letter from Secretary Williams will explain:

The meeting of the National Beekeepers' Association will be in Denver this year, Feb. 16, 17, 18. Arrangements are being made for the Eastern delegates and visitors to meet in Chicago on Sunday evening, and leave about 10 P. M. on a special tourist sleeper, to arrive at Denver Tuesday morning at 7:00 in good time for the first session. This will

insure a splendid trip, and give opportunities to get acquainted and discuss matters while *en route*. The sleeper charges will be about $3.00 in addition to the regular fare. Those intending to go from the south and west of Chicago will have the opportunity of joining the party if they will give me notice in time. All who are intending to go should write me and get full information, and thus insure ample accommodations.

Redkey, Ind. GEO. W. WILLIAMS, Sec.

It is our intention to join that bunch of beekeepers.

Our Cover Picture

As mentioned on page 62 the picture on the cover shows a part of our Blakeslee yard in the Holtermann winter cases. We have twenty-five of these cases at this yard with four colonies in each and one case at the home yard, so there are one hundred and four colonies in all that we are wintering in this way.

For alighting-boards, we used a lot of old covers that were not worth much to form a runway from the ground up to the entrance. We would not recommend using a good cover in this way.

As shown in the photograph there are some dead bees in the snow about each entrance. This is true in every case, although before some of the entrances there were more bees. This brings up the question of whether it pays to shade the front of the hive or case to prevent the bright sun from luring the bees out on days when it is too cold for them to fly. While the matter has not been settled definitely the consensus of opinion seems to indicate that it is impossible to prevent a good many of the older bees at least from coming out in the sunshine and becoming chilled in the snow. Sometimes boards may be leaned up against the front to shade the entrance; but too often these serve to confuse the bees that do come out so that it is doubtful whether they are of much advantage. There are fewer bees in the snow about the entrances in the cases than there are in front of individual colonies separately packed.

"Buy More Cotton."

THIS is the slogan that has been going through the country to help out our friends and neighbors in the South who are loaded down with great quantities of cotton with no market for it. A great many people benevolently inclined have been buying it up, and this is certainly a move in the right direction. In this connection our friend H. G. Quirin, the queen-breeder of Bellevue, O., has got hold of an idea that may be worth developing. He writes:

The A. I. Root Co.:—We wish to ask whether you folks have ever tried cotton for cushions and winter packing for bees. We are thinking quite seriously of making sufficient cushions for all our outyards, and also our home yard, from cotton; but as we have never tried it, and know of no one who has tried it to any extent for a term of years, we thought it well to make inquiry in regard to its use.

Our brother put up five colonies last winter with about a pound cushion over each, and he speaks very highly of it; but last winter was rather mild, and the bees might have wintered without any cushion at all; and as one swallow does not make a summer we thought we would make further investigation in regard to the use of cotton as packing material for bees. We can get cotton by the bale for about 3 cts. per pound. Of course it is not of the very highest grade, but it would not be necessary to have the best. One hundred cotton cushions would be but half as bulky as that many chaff cushions. This would be quite an item; but one of their main advantage would be that they are perfectly clean. With chaff there is more or less dirt and dust sifting through the burlap.

Bellevue, Ohio, Dec. 21. H. G. QUIRIN.

There will never be a better opportunity to lay in a stock of cotton-packed cushions for bees than right now. During the winter months beekeepers and their womenfolks can make up a good supply. A thin cotton-packed cushion, if placed under a telescope cover, will make a wonderful difference in the amount of brood that one can rear in the spring during the early chilly days just after bees are taken out of the cellar. Our correspondent's suggestion is worth trying.

Not Paralysis but Poison, Perhaps

MAJOR SHALLARD'S article, on page 995 of the December 15 issue, wherein he discusses the symptoms for what he calls the "disappearing disease," raises the question whether he hasn't had his bees poisoned. It may be that the bees were poisoned at their watering-place. Haven't we read in some place that our Australian friends sometimes poison a watering-place to get rid of the rabbit pest, fencing against stock with a coarse mesh, but not against rabbits—and bees? Or it may be there is some flower in that locality yielding a poisonous nectar. Why not, when we have the poison plants on the range, which, though appetizing to stock, are fatal to bees? Our own government has taken cognizance of this fact, and is trying to work out a system to protect the grazers on the forest reserve.

There is a disease known as paralysis, and this has come under observation in different localities; but we never knew bees to go to the field when once affected with ordinary bee paralysis. In all cases of paralysis we have seen, the bees got no further than the edge of the hive-stand, when they dropped on the ground and died within a foot of the entrance to the hive.

The name, "disappearing disease," is suggestive of some other cause than that suggested by Major Shallard.

The Montreal Bee Convention; the Proceedings in French

We are indebted to the secretary of the Quebec Apicultural Society, Mr. O. A. Comiré, for a complete copy of the minutes of the deliberations of that association at its last meeting, which took place in Montreal Nov. 11 and 12. Only a lack of space prevents our giving it in full in our columns; but we will say it shows plainly the lively interest in apiculture on the part of our neighbors on the north.

Among many prominent beekeepers there we note Mr. C. P. Dadant, editor of the *American Bee Journal,* who gave a detailed account of his recent trip to Europe. As this convention was conducted in the French language it will be seen that Mr. Dadant had a great advantage, as that is his mother tongue.

Another man of prominence there was Mr. F. W. Sladen, Chief Entomologist of the Experimental Farm, Ottawa, who gave an interesting address on queen-rearing.

The Canadian Secretary of Agriculture was also present, who received the thanks of the society for his personal encouragement and practical assistance.

To further the work of the society the Canadian parliament has been requested to grant a little financial aid.

It is a source of pleasure to us to note the activity displayed by our Quebec beekeeping brethren in their organic capacity. "One for all, all for one," seems to be their slogan.

Prof. H. A. Surface for Pennsylvania Secretary of Agriculture; the Right Man for the Place

We are glad to announce, especially to our readers of the old Keystone State, that the friends of Prof. H. A. Surface are keenly interested in his appointment as Secretary of Agriculture. Prof. Surface now holds the position of Economic Zoologist; and those who know him best believe, and justly so, that there is not a man in the State nor in the United States, for that matter, who is better fitted and more able for the position. As a scientist he ranks among the first in the country, and he is a recognized authority on all nature-studies.

This particular appointment is the most important one to be made by Governor Brumbaugh, as it involves the agricultural interests of the State, and any thing that promotes the interests of the agriculturists is for the welfare of every citizen.

Our readers should be keenly interested in securing Prof. Surface's appointment as Secretary of Agriculture, because he stands for the best interests of beekeepers. It was largely through his influence and untiring efforts two years ago that the State secured one of the best apiary-inspection laws in the United States. His appointment to the higher position would have a strong bearing on securing the much-needed funds for efficiently carrying on the inspection work. As president of the Pennsylvania State Beekeepers' Association he is in close touch with the interests of the beekeepers.

What is true of his relation to beekeeping is doubly true of his interest in fruit-growing and agriculture in general. A man who can take a poor worn-out piece of land worth $30 or $40 per acre and make it yield marvelous crops of fruit and field products so that it is worth more than ten times that much within a few years, deserves more than passing notice. Having charge of the orchard work of the State he is well known to orchardists through his untiring efforts in their behalf.

To place Prof. Surface in the high position of Secretary of Agriculture will mean to broaden his field of influence and usefulness. He is a man who has clearly proven his unselfish interest in the welfare of his fellow-citizens, and now this is their chance to reciprocate, at least in a measure. He is pre-eminently the right man for the place, and we trust that his thousands of friends will lose no time in getting back of his appointment.

Start a campaign in his behalf at once in your community. Get a letter off at once to Gov. Martin G. Brumbaugh, Philadelphia, Pa., urging the appointment of Prof. Surface as Secretary of Agriculture. Bring it before your grange and farmers' meetings also. Delay may mean loss to your own best interests.

The Kentucky State Beekeepers' Convention

On Jan. 5 we had the pleasure of attending the meeting of the Kentucky State Beekeepers' Association, held in the Assembly room of the Experiment Station, Lexington. Professor H. Garman, Entomologist and Botanist of the Station and secretary of the association, was present, and a live wire he is. He has been with the university for 24 years, and during that time has done some valuable work for Kentucky. He is a friend of sweet clover, and believes it has a great future in his State.

The meeting was called to order at ten o'clock, when we listened to an address by President Henry S. Barker, formerly judge of the Supreme Court of Kentucky. While he has not, perhaps, had the training that a college president is usually supposed to have, he is a practical business man as well as a man of affairs; and we understand that the institution has prospered under his administration. In his address of welcome, he paid a glowing tribute to Kentucky, its resources, its products, and its future. He is greatly interested in every thing that pertains to making two blades of grass grow where only one grew before. He is a lover of the farm and of the soil, and of its possibilities; and last, but not least, he believes there is a great future for the honeybee in Kentucky now that sweet clover has taken such a foothold in that State. We shall refer to this further on.

Other addresses were given by the editor of GLEANINGS; by Attorney Richard P. Dietzman, of Louisville, on the laws relating to bees; by H. C. Clemons, of Boyd, Ky., on the Kentucky inspection law, and by C. F. Stiles on beekeeping in Mississippi. In the discussion that took place on the bee-inspection law of Kentucky, it appeared that the law was unconstitutional, and therefore it was without effect. While it is only a county law, an effort will be made to get it re-enacted. The beekeepers would much prefer to have a State-wide law, but the legislature absolutely will not provide the necessary appropriation for such a law. Foul brood is making some little headway in the State, and there is urgent need of protection. A committee was appointed to present some sort of bill for the next general assembly at its coming session, and it is hoped something can be done.

Wintering in Big Quadruple Winter Cases; Sealed Covers versus Absorbents

ON page 2 of our last issue we gave a preliminary report of how the bees were wintering in the large quadruple winter cases. We have made another examination to-day, Jan. 9, going over a large number of colonies, and we find that, almost without exception, the bees under the glass covers are showing up a little nicer and brighter than those under wired screens with absorbing cushions above. In the case of the former the bees are well up toward the top. In the case of the latter they are clustered much closer, as if they were not as warm and comfortable as their neighbors in the other side of the case under glass covers. While this showing is by no means conclusive, it makes us feel that, for the climate of Medina at least, a plain board laid on top of the brood-nest, with a bee-space under it, making a sort of semi-sealed cover, is better than a cushion held up by a Hill device or any thing that will make a bee-space under it. Glass covers or the board covers are not sealed; but they shut off the escape of moisture and hot air a little more, apparently, than the absorbing cushions that let both heat and moisture ascend up into them. Other colonies in the same yard are in single, double-walled, or old-style chaff hives. Bees in these do not look quite as well as those under glass in big winter cases. The difference, however, is not very great. We have also a number of colonies in single-walled hives alongside of the others. While these colonies are looking well, they show quite a sprinkling of dead bees in front of them. It would look at this time as if the shrinkage of the clusters, numerically considered, will be much greater in single-walled hives than where protection is afforded. This, of course, is to be expected. With reasonable protection it looks as if there would be good wintering this year.

The Wonderful Development of Sweet Clover in Kentucky; a Truth that is More Wonderful than Fiction

THIS plant is making great progress in Kentucky, and already sweet-clover seed, both yellow and white, is being shipped out of the State to all parts of this country in carlots. The amazing thing is that all the territory in three counties—Pendleton, Bracken, and Robertson—is devoted to the growing of sweet-clover pasturage and sweet-clover seed. In fact, we were reliably informed by E. E. Barton, of the Bokhara Seed Co., and by others also, that these counties grow almost nothing else. It is making rapid headway in other counties. So profitable has become the growing of this legume that it has crowded out all other crops, even tobacco. Now, tobacco (where it can be grown) is generally considered to be a profitable crop; but it appears that sweet clover on these Kentucky hills gives even larger returns to the farmer. Just suggest for a moment to any one of these farmers that the plant is a weed and you will find yourself bumping up against a bees' nest at once.

In a few years, comparatively, the growing of sweet clover will be one of the main agricultural industries of Kentucky. It is not only profitable for the growing of seed,

which brings good prices, but cattle that are sleek and fat are pastured on it during the entire season.

Sweet clover is a *continuous* bloomer. Beginning along about the first of June and July with the yellow, which is followed by the white, there is a continuous supply of nectar clear along till the fall. It goes without saying, that the three counties mentioned—Pendleton, Bracken, and Robertson—where it is grown almost exclusively, make a fine bee country. Indeed, we were informed that in one of the counties there are 4000 colonies.

A good part of Kentucky is rolling land, consisting of knobs, hills, and some mountainous country. The limestone rock sticks out of the sides of the hills.

It took the farmers of the State some little time to realize that there is money in sweet clover. But they are not so slow to catch on now; and at the present rate of increase Kentucky will produce more sweet-clover honey than any other State in the Union; and that will be going some, because some of the western States are now producing a large amount of it—carloads and carloads of it. Kentucky will also be a land that will produce large quantities of meat and sole leather—two commodities to-day that are commanding high prices.

Another thing sweet clover is doing is to renovate the soil on some of those farms. Professor Garman, the Botanist and Entomologist, was somewhat skeptical about this at first. He was also rather unfavorably impressed because he could not get his stock to take hold of it; but he says there is no use in denying that the cattle where they are educated to it were thriving on it, and that it is proving to be a great soil-restorer.

We learned of one particular instance of one farmer whose land gradually went down until he reached almost the starvation point. He found there was a tendency on the part of sweet clover to grow on the land; but as he was opposed to the "weed" he kept it well cut down. He was disgusted, and finally moved to town, leaving the farm to take care of itself. In the mean time sweet clover overran the whole place. The neighbors began to tell him that his farm would grow crops as before if he would come back and cultivate it. He did so, and began to gather the seed from the "weed," as it had a market value. At the same time he began to grow other crops, for the farm was completely restored. That farmer is now one of the most enthusiastic sweet-clover men in Kentucky. This is only one of other instances of a like nature.

Such a man as Alva Agee, of the *National Stockman*, and one of the professors in the experiment station of Pennsylvania, and Mr. F. E. Dawley, of the experiment station in New York, both speak very highly of the plant as a soil-restorer. Yet in spite of all this testimony—in spite of the fact that it is being grown, hundreds and hundreds of acres of it in Kansas and Oklahoma and many other of the western States, we find that some old fogies and even one college professor still call sweet clover a noxious weed of no earthly use to any man. But there is no argument so strong as facts. When some of those who formerly opposed sweet clover are now finding that this same plant is pouring money into their pockets they may well "stop, look, and listen," for to see is to be convinced.

So delighted were we with what we learned about sweet clover in Kentucky that we have decided to drive down into the districts next summer to see the hogs and cattle and bees that are living and thriving on this so-called "noxious weed."

We omitted to state that the seed-gathering and nectar-gathering on the part of the bees continues throughout the season. The dry seed-pods and stalks are gathered while the bees are at work on the blossoms above. In the mean time the cattle and pigs run promiscuously through this luxuriant growth, furnishing milk, butter, and meat as well as sole leather. "Butter and honey shall he eat," and the three counties of Pendleton, Bracken, and Robertson are furnishing both, and then some. The truth is more wonderful than fiction; and when we go down into that country next summer we shall be equipped with cameras, and let the pictures speak for themselves.

The Behavior of a Cluster of Bees in Midwinter, as Observed by the Editor of Gleanings at Medina

In our issue for Nov. 15, page 789, we gave a review of Bulletin 93 on the subject of the temperature of the honey-cluster in winter, by Dr. E. F. Phillips and Mr. Geo. S. Demuth. In this it was shown that a cluster of bees in winter is not necessarily as still as death, although examination over the top of the frames might give that impression. It was also shown that the cluster has the power, when the outside temperature drops to a certain limit, to raise the temperature inside by means of bodily exercise, consisting of active movements on the part of the bees tugging at each other, shaking their bodies, and actually fanning with their wings. These showings were decidedly interesting—so much so that we

decided to construct a special hive with glass sides, put bees therein, and see for ourselves. We accordingly constructed a double-walled hive with packing at front and rear, and at the top, and space in the hive proper to receive one comb filled with stores, and wide enough to take in a fair cluster of bees. Indeed, there was room enough to take in two frames; but in order that we might see the bees on both sides we put in only one comb. The sides of this hive to permit observation could not of course be packed and paneled with double-walled wood sides. We used instead three thicknesses of glass spaced ⅜ inch apart, making two dead-air spaces. Dr. Phillips and Mr. Demuth, in their experiments, used only two thicknesses and one air space; but we decided to go a little further as our own climate is relatively colder.

The hive was duly installed and set on a support outdoors about ten inches in front of a window of the editorial sanctum.

Every thing was going nicely until we had a day of bright sunshine; and before we knew it old Sol shining through the glass sides made the interior of our experimental hive about like a hot-house. The cluster was immediately broken, of course, and the bees busied themselves by sliding up and down the glass inside of the hive, trying to escape, and some flew out at the entrance, notwithstanding the outside temperature was down to freezing. We had not anticipated this hot-house possibility, so we immediately had some wooden panels made to cover the glass, one for each side. Temporarily some folds of burlap were thrown over the hive to shut out the sun.

Several days have elapsed, and the side next to the office window has the panel removed except during the hours when bright sunshine might warm up the hive through the glass. But in the few days we have had for observation we have so far observed exactly what Dr. Phillips and Mr. Demuth have reported. When the temperature in the hive drops down to below 40 the cluster will gradually draw up closer, and the outside ring of bees between the comb and glass will be very quiet, exhibiting no movement but breathing, as shown by a slight distension and contraction of the abdomen. When the temperature gets low enough outside of the cluster, the inside of the cluster will be honeycombed; that is to say there will be holes or cavities scattered all through. Inside of these little recesses there will be here and there a bee fanning with its wings. But the movement of the wings in the cluster is very different from the movement of the wings in front of the entrance of the hive on a hot day to cause currents of air to pass in and out of the hive for ventilation. The wings in the cluster assume more of a tremulous movement, and apparently they move in such a way as not to cause any appreciable air-current.

Other bees will be engaged in pulling at each other. Still others will exhibit the same side movement of the bodies that we find in case of young bees that have just come home with their load of honey or pollen in summer. Throughout the inside of the cluster there will be a general movement, crawling in and out, even the queen participating in the "exercise." During all this time the outside ring of bees is perfectly motionless with their heads jammed in close together, apparently to shut out any escape of air.

We cannot quite understand *why* the outside bees should be sticking their heads into the cluster. If they breathed through the mouth, as do ordinary animals, we might surmise that it was for the purpose of giving their hot breath to the inside temperature of the cluster. But that is not the way bees breathe, but through little spiracles in the abdomen or thorax.

Another thing we cannot quite understand now is whether these movements as described produce the same effect on bees that they do on animals. In our case at least exercise stimulates the heart and soon a warm glow pervades the body. In view of the fact that the temperature of the cluster rises when this gymnastic work begins, it is to be presumed that the bees are not greatly different from their owners.

Later.—Dr. Phillips, to whom we sent a proof of the above, sends the following:

I scarcely need say that Mr. Demuth and I are delighted to have you confirm our statements, which may have seemed a little radical to those who had not seen what we did.

There are only one or two points to which I would call attention. In the paragraph concerning the position of the bees in the shell (see Bulletin No. 93, page 15, first five lines) we think that the close proximity of the thoraces and the interlacing of the thoracic hairs are important.

The next paragraph contains a misconception. Exercise in man produces warmth by the muscular activity, and the increased activity of the heart is the result of this muscular activity, not the cause of the warmth. The heat arises from the chemical changes in the muscles. This is true in both man and bees, while in man the heat-regulatory functions prevent a drop in temperature and bees have no such regulation.

Going back to the location of your thermometer, you are not measuring the temperature of the air immediately surrounding the bees. In Bulletin No. 93, page 15, top of page, see what we say concerning variation within the hive. Because of this variation your statement of the reaction when the temperature of the hive drops to below 40 degrees F. is somewhat misleading. The clustering comes, according to our observations, when the bees themselves and the air *immediately* surrounding them reaches 57 degrees F. The temperature at the bottom-board may be considerably lower.

E. F. PHILLIPS,
In Charge Bee Culture Observations.

Dr. C. C. Miller STRAY STRAWS Marengo, Ill.

THE chief thing in putting labels on glass, according to an item in *B.-Vater,* is to brush the paste, not on the label, but on the glass.

INBREEDING, if continued for a time, is generally believed to result in deterioration. But Dr. Kramer has shown that it merely emphasizes characteristics existing. Weak stock inbred will deteriorate, strong stock will not. According to that the great thing is to breed from the best without worrying about danger from inbreeding.

W. HERROD says, *British Bee Journal,* 405, that extracting-combs put away wet will not be attacked by bee-moth. "In the center of a pile of supers containing wet combs a brood-chamber full of dry combs was stored. These were entirely eaten up by wax-moths, which did not touch the ones immediately above or below." [This is interesting if true.—ED.]

H. CHRISTENSEN asks if my Italians seal sections as white as hybrids did. I have not noted any difference. With almost any kind of bees I think there will be an occasional colony that will have watery sealing, also that will varnish the sealing with propolis; but when certain fall plants are yielding (and I'm not sure what they are), any and all colonies will do this varnishing.

THE annual consumption of an average colony is thus given in *Illustrierte Monatsblaetter:* Honey, 40 kilograms (88 lbs.); pollen, 20 kg. (44 lbs.); water, 20 qts. Others have estimated the honey as high as 200 pounds. [While 200 lbs. is higher than the average, 80 lbs. is undoubtedly low. Our experience in feeding to build up colonies seems to favor an intermediate figure. —ED.]

DR. BRUENNICH reports in *Schweiz. Bztg.* a colony which had not swarmed in eleven years. The original queen, which he calls S (from which many non-swarming queens were reared) lived nearly four years, the last ten months of her life having with her a successor, S'. S' lived more than four years; her successor, S", being with her the last three months of her life. S" reared a successor when a few days more than four years old. Excellent work was done by the colony all the while. No wonder the Swiss believe in breeding for longevity and toward non-swarming.

"IF YOU use full sheets of foundation in sections it really pays to fasten it with melted wax an inch or so from the top on each side, to prevent the tendency of the sheets swinging over when the bees cluster on one side, so that the comb is attached to the separator," p. 954. Formerly I had trouble that way, but not a single case for many a year. My remedy is much better than melted wax. Simply have strong colonies so the super will be crowded with bees, and then never will "the bees cluster on one side." [Your remedy is all right; but not all colonies will be up to the required strength. You would say, "Do not run them for comb honey, then." Perhaps you would be wise.—ED.]

F. A. HANNEMANN, inventor of the zinc perforated queen-excluder, was born in Wartenberg, Germany, May 25, 1819. He came to Brazil, South America, in 1853, bringing with him two colonies of bees, which he increased the first summer to 28. He sold five of these, and increased the remaining 23 the next summer to 250. July 24, 1912, he died near Rio Pardo, Brazil. [The scheme of making holes big enough to let workers pass, and not queens or drones, is not one of the minor inventions in beedom. It is evident that Hannemann was not aware of the importance of his invention at the time.—ED.]

PLEASE, Mr. Editor, don't say a V starter in a section is a satisfactory compromise, p. 954. It's false economy. The bees will fill out with drone-comb; and unless you use excluders the queen will go up and fill out your sections with drone-brood. [We grant that it is false economy to use V-shaped starters; also false economy to use narrow starters an inch deep at the top. But there are those who believe that full sheets of foundation cause too much midrib in the comb honey, and a tendency to revive the so-called manufactured comb-honey canard of years ago. Said a prominent honey-buyer two weeks ago, "I believe that all comb honey should be produced with narrow starters because full sheets make too much midrib in the honey." We ventured the suggestion that he could not tell, by eating, comb honey made on full sheets of foundation from that on narrow starters; but he thought he could. Personally we do not believe there is any appreciable difference in the midrib—certainly none that the public will recognize. But there are those who believe that it is unwise to use full sheets, for the reason stated, and hence our suggestion in the way of a compromise to use a V-shaped starter.—ED.]

J. E. Crane

SIFTINGS

Middlebury, Vt.

That is certainly a "new discovery" or method of making chaff division-boards, fully described on pages 833, 834, Nov. 1, and well worthy of following.

* * *

Many colonies in this section have gone into winter quarters much lighter in bees than usual, and it will not be surprising if there is considerable loss in wintering. Such results are apt to follow a poor season as well as foretell a good one.

* * *

Wesley Foster, page 751, Oct. 1, says the Government bulletin on sweet clover should be in the hands of every person who wants to sow the seed. Quite right you are, my brother; and you might have added that it ought to be in the hands of every person whose land is adapted to its growth.

* * *

Our friend Arthur C. Miller, page 842, Nov. 1, quotes Allen Latham as saying that "good clean spit is the best thing for diluting royal jelly." This would seem to exclude those who use tobacco from this method of reducing royal jelly to a more fluid condition. I am sorry for them.

* * *

The experiments of the Department of Agriculture at Washington begin to throw a good deal of light on the subject of wintering. The discovery that has interested me most has been that, the lower the temperature outside the cluster, the warmer it is likely to be inside the cluster. This may account for the brood we often find in strong colonies in February, our coldest month.

* * *

Mr. Ames, in the Nov. 15th issue, gives a nicely illustrated article on wintering bees in a four-hive case with permanent bottom-board, somewhat after the plan of Holtermann. Those four-hive cases certainly look good, and I am sure they can do their part in carrying a colony through our cold winters; but I doubt if they are much better than single hives well packed. I made a case three years ago that would take twelve single-walled hives with their entrances at four points of the compass. They are well packed, and wintered well; but I fail to see that they do any better than in well-packed single hives.

* * *

Page 816, Oct. 15, in footnote to Mr. J. J. Wilder's article, you appear, Mr. Editor, to take issue with him, contending that, if a ten-frame hive is the best size in one location, it must be in another. I honestly believe you are mistaken. Many of Mr. Wilder's yards are quite peculiar. In those places where the partridge pea is his chief source of surplus, the bees do not breed up into strong colonies for the reason that, while working on this source, they gather very little pollen, but they gather the nectar from glands from the base of the leaf-stalk. As a result, the amount of brood in most of these hives is quite limited, and colonies rather small. Of course a small brood-chamber will force such colonies into supers much better than a ten or twelve frame hive. I can well believe his statement that eight half-depth Langstroth frames are preferable to full-depth frames, as such would be ample for the brood, and it would force the bees to store most of their surplus above in the super. [Your points are well taken if the conditions are as you state.—Ed.]

* * *

There seems to be some mistake as to the amount of sugar syrup required to draw out a set of frames of foundation. The editor says that the foreman of the yards at Medina says, page 794, Oct. 15, that a colony drew out six combs of comb foundation one-half on one quart of sugar syrup, half and half, and that he thought they would complete the job on another quart. As a quart of syrup of this quality would weigh about 2 lbs. 10 oz., two quarts would contain 2 lbs. 10 oz. of sugar. If this was enough to produce six combs complete, then it would require 7 ounces per comb, or 3 lbs. 8 oz. of sugar to fill an eight-frame hive. Eight frames of drawn comb would weigh somewhere from a pound to a pound and a half of wax more than the foundation used to fill the frames. Some have thought it takes 25 lbs. of honey to produce a pound of wax; some have thought 20 lbs. Others have estimated that it takes from 10 to 16 lbs., while these Medina bees are able to produce a pound or a pound and a half of wax on 3½ lbs. of sugar. Well, I am not going to say they didn't do it, or that other bees can not do it while you are feeding that amount of sugar syrup. They will sometimes do it without any feeding at all; but I am a little skeptical about their doing it from the syrup fed them alone. Were they not getting more or less from the fields at the same time? [See what R. F. Holtermann has to say on this subject, p. 13, last issue.—Ed.]

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.

In the editorial columns there appeared a word of caution to would-be inventors of new hives and fixtures. The warning is doubtless timely; but all we now have we owe to the dreams of enthusiasts and the experiments of the dreamers. There are many things yet to come in the advancement of our industry, and it would be far better to disappoint than to discourage the good that comes from them.

* * *

If we are all successful in producing a crop of honey each year, we should fail from overproduction. Did you ever stop to consider what would happen if it were possible to pay every laborer in the United States ten dollars per day for thirty days to cease labor? The nation would starve to death. If we fail to get a crop, there is always some other place to fill the place we leave. If some other place fails we shall ofttimes be benefited by their failure. So the world goes. Production is based on ups and downs, in a give-and-take manner.

* * *

With the president of our State Association, as well as a majority of the executive board in the North, a new era has begun in our State Association. I am of the opinion it will result in a much more healthy condition of affairs. The fact that it will eliminate the petty politics which has been far too prevalent in the South is worthy of consideration. In Prof. Willis Lynch, Harry K. Hill, and J. G. Gilstrap we have a strong trio to govern the body. That Prof. Lynch as president will be the strongest and most efficient man for the place that we have had in recent years is well known. He is a scholar, gentleman, and a man of wide experience and travel, with a most pleasing personality and kindly disposition, and enjoys the confidence of all. M. H. Mendleson deserves thanks for his unrelenting fight for the North.

* * *

Wesley Foster speaks of the prohibition amendment carrying in Colorado. Well, it did not carry in California by a great many thousand. I hardly thought it would, on account of the tremendous influence the grape industry gave the liquor men in fighting the amendment. If it had been only a question of killing the saloon alone it would have carried handsomely. Now the grapemen are fearing the result of another election in 1916, and are asking that the saloon men get out from behind them. I could stand it all pretty well as to that part; but when San Francisco voted three to one to defeat the red-light abatement law my shame for that city was complete. The loyal support of the rest of the State, however, overcame the result in San Francisco. San Diego voted three to one for the law, thanks to her good people. We are inviting the world to the two great fairs that are to be held at these cities. Our sons and daughters are invited to come to a city whose moral test has just been given. Shame, for the showing of San Francisco!

* * *

A movement has been started in San Francisco to divide the State into two parts —the southern part to include the counties of Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, San Diego, and Imperial. A division has been talked of before in the South, due to the impression that the southern half of the State is paying an unjust proportion of the State tax. This time the movement has started in the North, due to great dissatisfaction on moral lines. The North (principally San Francisco) is angry because the southern half voted the red-light extinguisher amendment to the constitution on them, besides giving them an uncomfortable feeling on the prohibition question. In the South there is a feeling of as deep dissatisfaction over the showing of the North on these lines. So in common they have a feeling of desiring to eliminate each other. If the question should be submitted to a referendum I should not be the least surprised to see the separation come about. Should it come about it would leave almost the entire sage-producing section in what would be known as Southern California, while the only region producing alfalfa honey would be in Imperial County. The South would be, in my opinion, the gainer in this line, for practically all sage honey would come from the southern section, and would soon be known to be the only sage-producing State. With the grape industry eliminated there is no doubt that Southern California would be a dry State.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.

Rain, rain, rain, and slush. This is a very general condition in Texas this December. Good fall and winter rains mean good honey crops the following year, however.

* * *

Inventory time was here at the close of last year. I wonder how many beekeepers have taken stock of their possessions; and how many are going to keep books during 1915, so that they may be enabled to "know where they are" any time during the year.

* * *

COMB HONEY ON HIVES IN WINTER.

The bad roads, caused by the long-continued rainy weather, have prevented hauling home a large part of our comb-honey crop. As a consequence, something over 35,000 pounds of choice white comb honey is still on the hives. As many as three and four supers are tiered up on many colonies. As we have not had much very cold weather, none of it has even begun to granulate; and as there is always a great deal of well-sealed comb honey that does not granulate at all during some winters, we hope that this may become true with all of it this year. As soon as the roads permit, most of the honey will be hauled in and put in "warm storage" however. This should prove an experiment of some value to the bulk-comb-honey producers who sometimes have difficulty in disposing of all their honey in the fall.

* * *

THAT BEE-BOTANY DEPARTMENT.

I am one, Mr. Editor, who would favor such a department in GLEANINGS. It is very essential that we be better acquainted with the flowers that yield the nectar for our honey crops. It is very important that we know the honey-yielders so that we can locate our bees properly and to the best advantage. Even outside of that, most of us do not live merely to make money out of every thing that we do; but for those of us who are after more knowledge of those things that have to do with our chosen pursuit, such a department could be made of considerable interest. I worked for years on the collection of Texas honey-yielding plants, and I believe I have about as large a private collection of the honey flora of one State as anybody. But I have not had the time nor have I been able to collect all the honey and pollen yielding plants that grow in Texas which help more or less in the yield of honey, pollen, or both. It is interesting indeed to study nature's flowers, and doubly interesting if we consider the value attached to these flowers from an apicultural standpoint.

* * *

WHEN TO FEED THE BEES.

This question is asked very often indeed. There seems to be no end to it, in spite of the fact that it is so often discussed in the bee-journals. I have always been of the opinion that bees should be so managed as not to require feeding at all. However, there are times during a season when the colonies may become so short of stores that it becomes absolutely necessary to give them such assistance as they may need in order to tide them over. But outside of this I do not believe that it is as profitable to feed the colonies either in the fall or in the spring as it is to leave plenty of honey on the hives in the fall. We have found that colonies with plenty of stores in the hives during the winter and throughout the following spring always build up to rousing strength with very little attention, and are the colonies that gather the most honey during the honey-flows, especially the early flows. We have made it a practice, therefore, for many years, not to take honey from colonies too closely, but to leave really more honey than they may need. The result has been that we are enabled to get just so much better yields from our colonies than those beekeepers who believe in "robbing close," and then depending upon feeding sugar syrup in case the colonies need it. The trouble about such a plan is that too often the feeding is either neglected altogether, or not properly done, or not enough is fed for best results. Another objection that we have toward wholesale feeding is that it wears the bees out unnecessarily when they are needed the most. This is especially true in the spring, when every bee is worth several bees later in the season. Even in the fall it is a good plan to disturb the bees as little as possible. If we feed them, the wearing-out effect it has on the bees begins to show very early the following spring in that they die much earlier, and at a time when we ought to have them to aid in the early brood-rearing operations. The better way is to leave plenty of stores on the hives in the fall; and this will not only save feeding and the trouble connected with it, but will give the best results in the way of stronger colonies and larger honey-yields.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.

QUESTIONS ON QUEEN-REARING.

A correspondent wishes me to answer these questions:

"If on the second day after a colony has been made queenless we take away all the brood and give the bees a frame containing only eggs from our best queen-breeder, why is it that quite a share of those eggs will disappear instead of all hatching into larvæ, as would have been the case had there been brood in all stages left?"

This is a question I have often tried to solve, but have never done so satisfactorily. Of course a part of the eggs are removed to give place to the larger queen-cells. I might as well say that I do not know why more than those necessary are removed unless the bees are thrown into an abnormal condition by manipulation. I have often noticed that eggs do vanish, as by magic, under certain conditions where a colony is made queenless, and especially from a nucleus under the strenuous circumstances of trying to see how many queens can be gotten from it in a season. Where we allow the young mated queen to stay in her nucleus till the first 100 or more eggs have hatched, before taking her away for shipping, every egg will be hatched; but if she is taken away when she has been laying only from twelve to thirty-six hours the larger part will disappear. And if this early withdrawal is continued the nucleus will become so weak after a month or two that it will succumb to robbers when a time of scarcity occurs. Who among the readers can give us further light?

He next asks, "What becomes of the eggs? Do the bees eat them?" I would not say that the bees always eat these missing eggs; for I am aware that where bees are drummed or shaken into a box so as to make a new colony of the drummed swarm, as we used to do in what was termed "artificial swarming," thirty to forty years ago, many eggs would be found on the board under the box three or four hours later if the queen was laying at her maximum at the time the artificial swarm was made. But I have repeatedly seen bees eating the eggs as they came from a queen when she was suddenly disturbed so that she drew her abdomen from the cell.

He now asks, "If the bees eat the eggs which are missing, are they used in the preparation of the royal jelly? If they are, would the eggs of a black or hybrid queen affect the coloring of the young queens reared from golden Italian larvæ?"

Because bees eat eggs, it does not necessarily follow that they enter into the food given the young queen larvæ, for, according to my observations, hundreds and thousands of eggs are eaten by the bees when they have no disposition to rear queens. In times of great scarcity the cells will be cleared of eggs by the thousand, and all ideas of brood-rearing given up; and if fears of the existence of the colony are entertained, even the larvæ will be eaten except those about to change to the pupa form, and these will be sucked dry in order that the existence of the colony may be maintained. And even if they did enter into the royal jelly they could only form so small a part of the whole that little or no chance for coloring could be given, even were there any grain of truth in the theory that food of any kind has aught to do with the color of the insect to which it is fed while the insect is in the larval form. From many years of observation I have failed to find that black or hybrid nurses, or eggs or larvæ from a dark queen, in a hive from which Italian queens are being reared, have any thing to do with the coloring of such queens.

The last question, "What is the shortest time after hatching, the weather being favorable, before the young queen leaves for fertilization?"

Five days after maturity is the least number I ever knew to elapse. But in natural swarming, or under most circumstances where the bees have their own way, and especially where the weather is favorable and the flow of nectar good, not one queen out of ten is allowed to emerge from its cell at maturity, for under such circumstances all but the first of the young queens are held by the bees in their cells till a decision is made as to future swarming. Hundreds are held from one to five days in their cells by the worker bees, after they would have gnawed off the capping to their cell, and come out, could they have had their own way. Queens are more often held in their cells in this way than is generally supposed. In one instance I opened a hive and found a young queen piping away vehemently. After looking the hive over I found a queen-cell with a queen in it which I had overlooked when cutting out cells previously. As there were plenty of bees in this hive I took the frame having this cell upon it, bees and all, and formed a nucleus. The queen made a successful flight the next day, and in two days more, or three days in all, she was laying worker eggs.

GENERAL CORRESPONDENCE

EIGHT-FOOT FENCES AROUND THE BEE-YARDS

BY R. F. HOLTERMANN

In "Siftings," page 883, Nov. 15, J. E. Crane does not agree with me upon the point of high-fence protection for bees. Now, I have met Mr. Crane at conventions in years gone by, and I have always valued his sound practical judgment. I read his department with interest, and find it instructive. There may be a condition, other than the fence, which brings about the result he mentions, or I have never knowingly had the combination of conditions he mentions. It is possible to find something an unqualified success for years, and then, owing to the introduction of another combination of conditions, find that in that particular instance it was a failure. Mr. Crane states, "I have known just such a yard hopelessly ruined in spring by such a fence. If the weather should be sunny, with cool north winds, such a yard will be many degrees warmer than outside." I reasoned that way before I tested the matter, but have never had the result he mentions.

Now let me say this: If bees are packed, there are many days when, so packed, they will not be influenced by the sun's warm rays, when, with less packing at the entrance, or with single-walled hives, they will be drawn out of the hive when the cold wind outside of the hive would be injurious to them. This is obvious, and is particularly true if the bees have had a cleansing flight. With the winter packing as I have described it, there is another advantage; and that is, that the first flight they have, unless there is an extraordinary rise of temperature, will not be at the same time with all the colonies. The stronger colonies, and those requiring a flight the most, will be those coming out first; and perhaps—in fact, quite often—those not requiring a flight will not fly at all the first day it is possible for them to fly. If a long time elapses between the time the well-wintering colonies might have had a flight, and when they can again fly, it may be an act of wisdom to disturb such colonies the first time when conditions are favorable. They will then winter better. This is particularly true of mid-winter flights under favorable conditions.

Next the side of the winter case from which the bees fly is not close to openings in the case in front, or the first to the right or left of it. This is on account of the way the cases are placed, with the object of breaking the rows of flight.

Where hives are set out of the cellar, and placed in rows with the entrances all in the same direction in the row, the tendency —yes, general result—is for *all* the bees to fly about the same time, resulting in tremendous excitement, and liability of the bees drifting, by which we mean that the bees are attracted to the most populous colonies or to the ends of rows.

By having just a certain combination of circumstances it would seem possible to have the result Mr. Crane mentions; but I have not so far had this condition, and I have had more loss in years past from not having the protection now given. What I should like to ask Mr. Crane is, Was the fence about 8 ft. high? were the bees packed in outer cases? and were the cases so placed as to break the openings in the rows so as to have every second case each way without an opening for the bees to fly from?

Let me again say, I do not despise—in fact, I wish, if possible—a location with natural shelter; but I would sooner have the protection from spring cold winds a distance of 8 ft. from the ground than to have none; and when it comes to winter protection I consider such protection almost imperative.

TARTARIC ACID.

Mr. Crane is also inclined to find no use for tartaric acid. I find that, by using it, I can make the syrup thicker than if I do not use it. I am an advocate of late fall feeding in my section. With 100 colonies I like to feed about Oct. 15. The weather may be cool at that time; and if the syrup is made 2¼ parts sugar to one part water it may crystallize so that is it difficult for the bees to take it. This is found particularly true if an inverted perforated feeder is used, for the crystals tend to form at the bottom of the food. Where tartaric acid is used this crystallization does not readily take place. More than that, where this thick syrup is left in the jar I have known the jars to break from the process of crystallization inside. Why or how I cannot tell; but that it takes place I know to my cost. Where tartaric acid has been used the

crystals are an entirely different formation. They take *very* much longer to form, and they never break the jar.

On the ground of chemistry the advantage of tartaric acid can be explained. The bees storing the syrup rapidly cannot be expected to invert it as thoroughly as with nectar which they gather thin from the field, and then have to evaporate to a consistency equal to the syrup made according to the above directions. A young man, quite closely related to me so far as practice is concerned, used to despise tartaric acid; but recently he experienced this crystallizing in cool weather, and remedied it by reheating the syrup in the feeders and adding tartaric acid.

Brantford, Canada.

MOVING BEES IN CAR LOTS

A New Arrangement of the Staging to Secure Greater Rigidity and Economy of Space

BY J. G. BROWN

Mr. Brown, recently from Colorado, is now one of our apiarists. He accompanied the second car of bees to the Dismal Swamp.—Ed.

On page 547, July 15, 1914, appeared an illustration of a plan of car staging for moving bees by rail used by The A. I. Root Co. in shipping bees to and from Florida. But the severe strain to which the staging is subjected when holding a heavy load, and the bumps of the locomotive when switching, together with the excessive freight rates on bees, which in turn makes necessary the conserving of all possible room in the car, caused the devising of a more substantial and at the same time a more economical plan for future car cratings.

It will be noted by referring to the illustration mentioned above that the uprights bore the weight of all the tiers of hives above them, plus the weight of the staging. When the distance from the top of the upper tiers of hives to the railroad track is taken into consideration, together with the heavy motion of the car, the reader will form some idea of the strain upon the uprights. Neither will he be surprised that a part of the staging gave way in the first car, and Mr. Marchant was compelled to stop cars in transit and rebuild the staging.

Fig. 1.—Crating on platform ready to load.

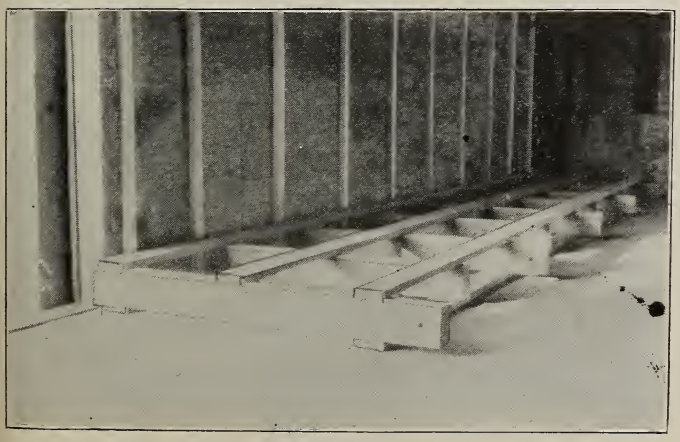


Fig. 2.—One section in the car ready for the hives.

The original purpose was to arrange the hives so that any one of them could be removed in case the bees died on the trip; that the attendant might be placed at the least possible inconvenience if for any reason he wished to remove any colony. Experience showed that this was unnecessary. It wasted valuable space, for it is very bad to load a

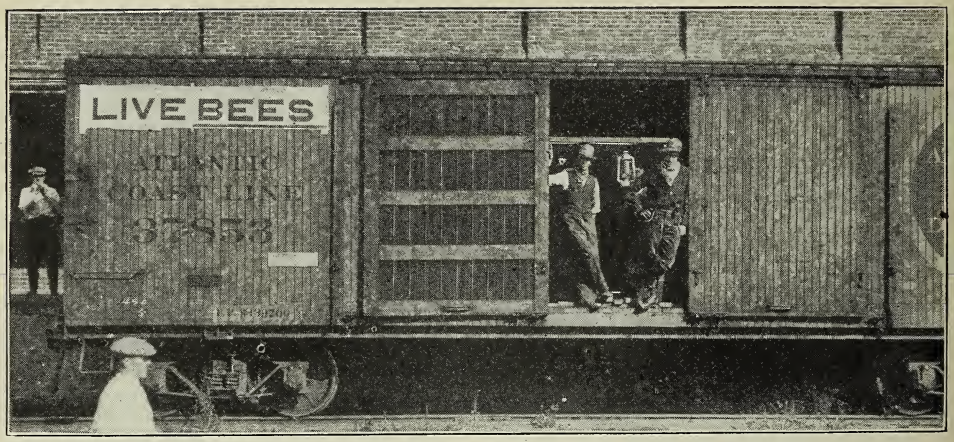


FIG. 3.—Southern bound—first car.

large car to the minimum weight at best, so a plan had to be evolved that would reduce the waste space and at the same time increase the strength of the crating to be used. When necessary to take the bees south again, the form of crating shown in Fig. 1 was devised.

The reader will gain a fairly accurate idea of the simplicity of the crating by reference to the cuts. This crating was devised by G. H. Rea. It consists of five pieces 15 feet long, 1 x 3 inches; five pieces 2 x 4 x 33½ inches; five pieces 2 x 4 x 37½ inches. In nailing up, the cross-pieces were placed on the floor, beginning with one piece 2 x 4 x 37½ inches long set up on edge, then a piece 2 x 4 x 33½ inches long, and then alternating the pieces in this way until all the ten pieces were spaced, covering the 15 feet. It will be found the pieces were just 20 inches from center to center. Then one of the 1 x 3-inch boards was nailed on these cross-pieces just one inch from the ends. This allowed each cross-piece to project one inch to catch behind the upright strips nailed on the side of the car, as shown in Fig. 2. Another of the 15-foot pieces was nailed on the other end of the cross-pieces, allowing the long pieces to project 4 inches, the short ones coming flush with the edge of this board. The third 15-foot piece was spaced halfway between these two. The crating was then turned over and the remaining two boards nailed on the cross-pieces opposite the two outside boards already nailed on, and the crate was complete.

When the bees were loaded in the car,

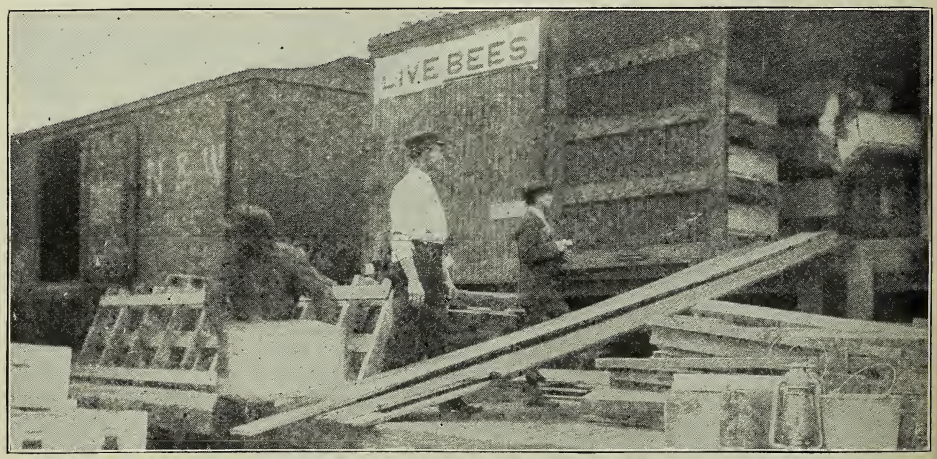


FIG. 4.—Loading steamer on Norfolk dock. As shown, the hives were slid down the plank and easily transferred to the deck of the steamer.

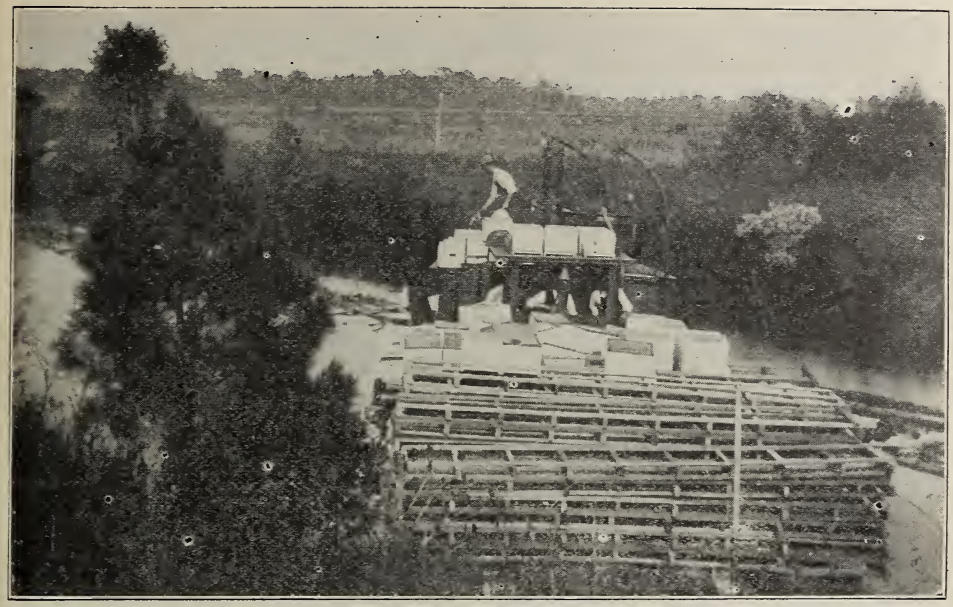


FIG. 5.—Tug "Commodore" freighted with bees and supplies, standing off to let a log raft pass. George Rea on top, supplying water through the screens.

twenty uprights, 2 x 4's, long enough to reach within about one inch of the car roof, were used. These pieces were bolted to the crating with ⅜-inch bolts. These, as will be seen, were bolted to the ends of the long cross-pieces in the crating. When these uprights were bolted in place, short pieces 2 x 4 were cut long enough to reach across the alley between the sections. These were spiked to the floor. Similar braces were placed at the top of the uprights. The halves of the car were now braced with 2x4's across the opening at the door, both on the floor and up at the top, and the job was complete.

By using the present method one can load 320 colonies, or, if the weather is cold, 384 of the ten-frame size in a 36-foot car.

It will be seen that this method allows sufficient room to use a sprinkler over the tops of any of the hives should any require water, as they most surely will if the weather be even moderately warm or the colonies be strong. It also allows an alley clear through the car from end to end and across the car from door to door, allowing room to carry water, trunk, suit-cases, etc.

When we loaded the car we had 16 in each tier in each section, or 64 in one tier in the whole car. We started on the floor of the car in one corner, setting the hives in pairs with their entrances toward the opposite end of the car, their backs tight up

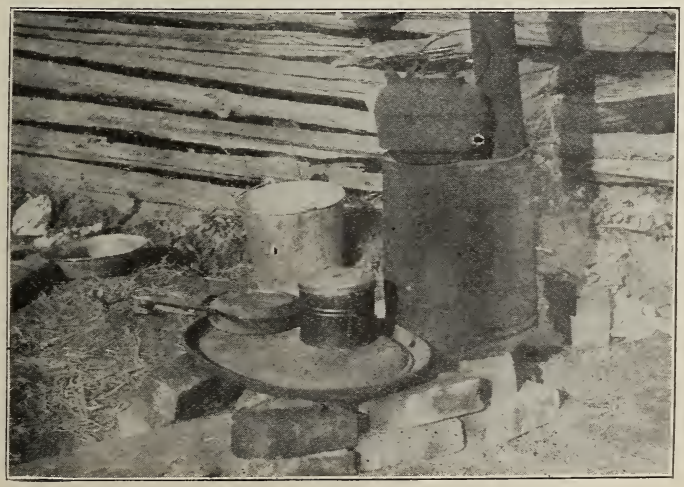


Fig. 6.—All the comforts of home at the camp in the Dismal Swamp.

against the corner. The next pair of hives was set tight against the bottom of the first pair, etc., until 16 were placed. It will thus be seen that the arrangement allowed a space between the different pairs of hives for the free circulation of air.

When one tier was placed, a section of the crating was laid on top of the tier and crowded tight against the side of the car, which held it snugly in place. As mentioned before, the strips on the side of the car were so arranged that the ends of the 2 x 4's just caught behind them.

In warm weather this method of loading would be varied slightly by laying one section of the crating on the floor and beginning loading on top of it so as to allow the free circulation of air under the bottom of the lower tier.

By this method the crating is simply carried out when the car is unloaded, and is ready for use again whenever it may be needed.

In cold weather, as explained before, the hives may be placed right on the floor of the car.

As a further precaution the bottoms are removed, and each tier takes nine pairs of hives, instead of eight. Of course, tops and bottoms are screened.

THE HOLTERMANN WINTER CASES USED AT MEDINA

BY H. H. ROOT

In spite of the widespread interest in cellar wintering we believe that the large quadruple winter cases have never been used so extensively as during this present winter. A large number of beekeepers are wintering their bees for the first time this year following the general plan of the multiple-hive winter case, or, as it is sometimes called, the tenement hive. We ourselves are wintering one hundred and four colonies in cases made according to the directions given by R. F. Holtermann on pages 664 to 668, September 1. See editorial, p. 2, Jan. 1.

From our own experience so far, and from a large number of reports which we have received, we are prepared to believe that the winter case holding four colonies is the best solution of the wintering problem for localities where there are great extremes of heat and cold, especially in some of the more northern States, and in Canada, where the temperature goes below zero for a good many days at a time, and where there are high winds. Having said this we realize that cellar wintering will never be a thing of the past. The whole question depends on the cellar, on the locality, and last, but not least, on the man.

Good clear cypress costs in the neighborhood of $34.00 a thousand. In making these cases, however, we selected a cheaper grade, costing about $25.00 a thousand. However,

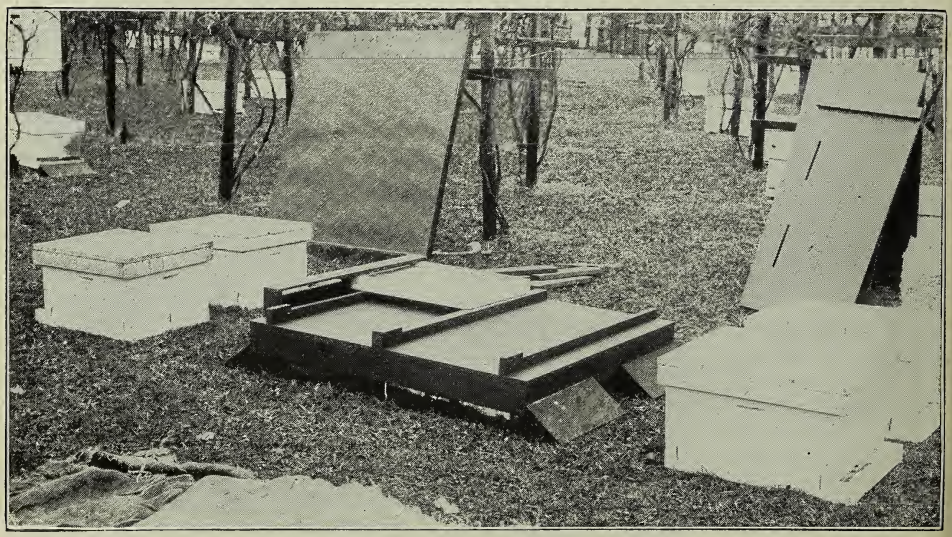


FIG. 1.—Each pair of hives moved out, and the winter-case floor set in place.

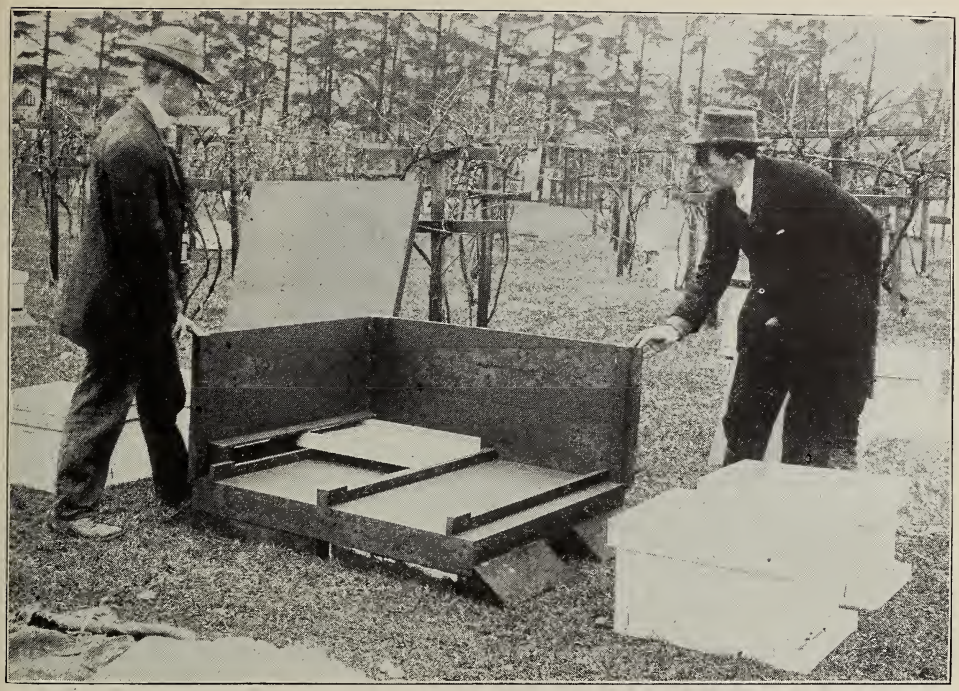


FIG. 2.—Two panels held in position to show the relation of the outside entrance to the hive entrance, and the "bridge" for keeping the packing material away from the entrance.

counting the lumber, paint, paper, and the labor, we found that the cases cost us very nearly $5.00 apiece, or, in round numbers, about $1.25 per hive. These figures do not include the packing material nor the labor of packing, etc.; therefore it may be seen that the winter case is not a cheap plan of wintering by any means, when the first cost is considered. But those who have wintered their bees thus for several seasons claim that the winter case is economical in the long run because of the fact that the colonies come through the winter in better condition than when wintered in any other way.

Assuming that the hives have been placed in groups of fours (two pairs back to back) it is necessary when ready to pack for winter to set each pair of hives to one side temporarily and place the quadruple bottom of the case in place on a suitable foundation. In Figs. 1 and 2 we placed a single-hive bottom-board in position to show how it is supported, and how the entrance is bridged over to prevent the packing material from filling it up. A

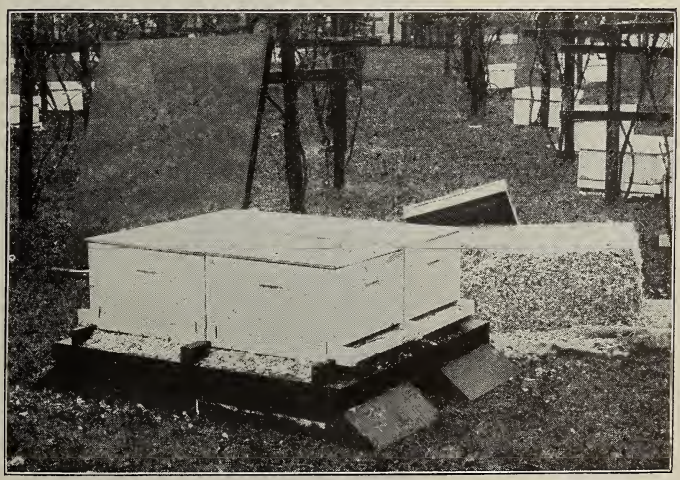


FIG. 3.—The four hives in position, the regular covers removed, leaving only the super covers so that the hives may be close together.

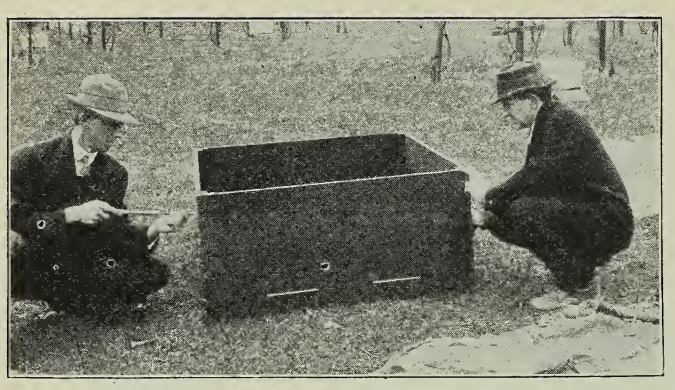


FIG. 4.—An automatic screwdriver for putting in the screws at the corners of the case.

permanent bottom, such as the one described by A. C. Ames, page 889, Nov. 15, is a more convenient arrangemeut provided the same location will be used continuously year after year.

In Fig. 2 two of the sides are held in position temporarily to show how they telescope down over the edge of the floor.

In Fig. 3 some packing has been strewn over the floor between the supporting cleats and the four hives placed in position. We used baled shavings for packing, not because we consider shavings better than leaves as recommended by Mr. Holtermann, but because they were more convenient. The bale of shavings is shown just back of the four hives in the picture.

It is something of a problem to move twenty-five or fifty of these large cases after they are nailed up. We nailed up the sides, therefore, arranging the cleats so that every thing would fit together properly, and then moved the whole outfit in the flat to the Blakeslee yard, where we intended to use them. Screw-holes had been drilled in the proper places, and it was but a short job to screw the corners together with an automatic screwdriver, as shown in Fig. 4. It would have taken less time to nail the corners; but since it would be more difficult to take them apart in case we should have to transfer them to some other yard in the future we decided to use the screws.

Fig. 5 shows the case set down over the four hives and the shavings added. We remove the regular covers, using the super covers only so that the hives may be placed close together, as shown in Fig. 3.

Fig. 6 shows one of these cases in which we are wintering four colonies at the home yard just after we had finished packing it. The cover picture for this issue shows one of the cases out at the Blakeslee yard after a month of snow and ice. We have two bee-cellars which we consider almost ideal; but somehow we have a more comfortable feeling when we think of the bees in these snug winter cases than we have when we go into either one of the cellars. Perhaps it is because we imagine that the bees, if given their choice, would ask for their hollow tree and the privilege of flying whenever the weather is suitable. A winter case is probably the nearest approach to the hollow tree practicable for the modern beekeeper. So far as we know, the winter cases give such protection that the clusters maintain nearly the same position regardless of the temperature outside.

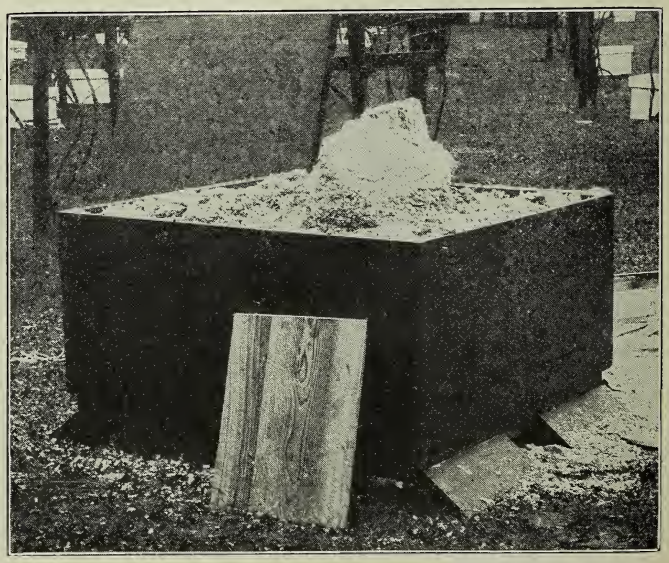


FIG. 5.—The case set down over the hives, and the packing material put in.

REPORT OF THE CHICAGO NORTHWESTERN CONVENTION

Prices, Production, and Transportation Considered

BY J. L. GRAFF

One of the delegates to the Chicago Northwestern Beekeeping Association meeting held in Chicago December 17 and 18, struck a responsive chord when, in a modest talk, he advocated a more altruistic feeling among the men who engage in the production of honey. For several years the doctors, members of the American Medical Association, have been employing a lecturer to travel among the physicians of the nation to teach this kind of feeling for one another, and it is said to have had the most desirable effect. This beeman thought it bad policy to go about knocking one another, knocking the honey and the prices of others—better go around helping one another for the good of all. This little advice followed a hot discussion about prices, whether a beekeeper should put on a fancy price to indicate that the goods were of high quality, or whether the price should be kept within the reach of the average consumer. One apiarist held to the opinion that, if he established a high price, the buyer would form the impression that he was offered top-notch goods. The man who was satisfied to charge a less price resented the implication that his honey was not as good. From time immemorial these discussions have warmed up beekeepers' meetings, and doubtless this is the reason the modest man in the back row essayed to mix in a little leaven.

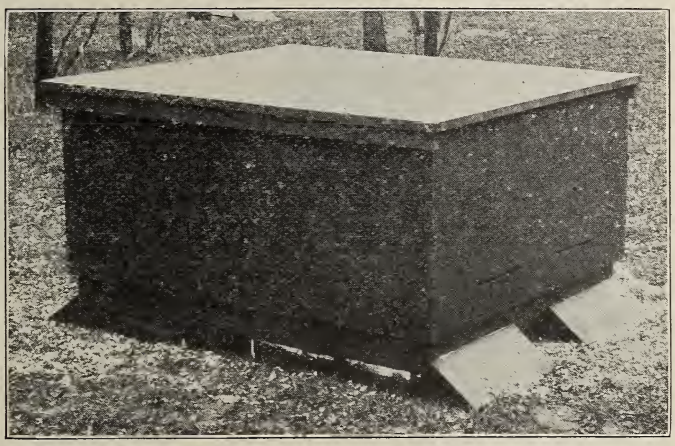


FIG. 6.—The cover on, and the job complete. The cover is roofed with a good quality of paper, and painted.

Nearly fifty men attended the meeting. They hailed from farms and homes within the Illinois, Indiana, and Wisconsin district close to Chicago. There was a considerable amount of woe mixed in with the natural jollity of the beekeepers, for nearly all of them told of a shortage of crop from the last honey-flow. An Iowa man got from his bees about 40 lbs. to the colony; a northern Wisconsin man had taken 80; a northern Indianian, 40; a northern Illinoisan, 40; a central Illinoisan had no surplus at all; a Lake County, Indiana, keeper, got 40; a Chicagoan 45; another Chicagoan 75; a western Illinois man 30. The largest production was reported by a member from central Wisconsin, 115 lbs.; and another Badger said that he had a surplus of 85 lbs. The other productions ran from forty down as low as twenty, and four said they had no surplus at all, and were heavy sugar-buyers in preparation for the winter months. The drouth of the late summer and fall months curtailing bloom was given as the cause of the light crop.

One of the most interesting talks of the convention was made by H. C. Ahlers, West Bend, Wis., who related some of his experiences in shipping his apiaries to vast Spanish-needle beds on the bottoms adjoining the Illinois and the Mississippi rivers. The cost of freighting from his home to Louisiana was $170 a car one way—500 colonies to the car. This did not include his own transportation traveling with the car; and this fact brought up the question as to the alleged unreasonableness in carrying a stockman free with his stock and charging a beeman for the privilege of riding with and caring for his bees *en route*. Mr. Ahlers told how he managed to secure the colonies in the car so that they will not be jolted out of place. He fastens stanchions in the car, leaving space to walk from one end of the car to the other. The space at the doors is left vacant for his own occupancy, but the hives are tiered up as high as the height of the car will permit. Plank nailed on lengthwise and crosswise at the doors are fastened

to the stanchions and wedged tight, so that none of the hives are jolted about. He carries 40 sixty-pound cans of water, and gives this to the bees by pouring it on the screens at the top of the hives, the passageway allowing him access for such purpose. An ordinary stock-car is used.

Another apiarist told of using refrigerator cars, by which plan an even temperature was preserved *en route.*

E. G. Bacon, of Wisconsin, talked on the subject of educating the people to eat honey. It isn't enough to say to a family, "Eat honey." The thing to do is to tell them why they should do so, to demonstrate the manifold points of utility, and to point out opportunities to substitute honey for sugar. The beekeepers should start a propaganda of this nature, but it cannot be done unless the money is first raised. One of the speakers said that if every beekeeper would contribute the price of half a pound of honey much could be raised for such an educational campaign. People of other countries, notably Germany, consume vast quantities of honey, and at a cost much in excess of prices in this country.

The question was brought up as to why the big bakeries are making use of less honey. It was stated that a big concern that formerly made use of 125 carloads is now using but fifteen. A South Water Street commission man said that the honey-sweetened cakes are less in favor.

E. S. Miller, Valparaiso, demonstrated the use of a bee-cellar in wintering bees. The proper temperature in this cellar is evenly maintained by the use of a sub-earth vitrified eight-inch air-duct, starting fifty feet away from the building at the earth surface, and opening on the bottom of the cellar. The cellar, 18 x 24 x 7, has a story above it, and then an attic. An upright flue extends from the bottom of the cellar through the roof, and a stove on the second floor heats the air sufficiently to keep up a circulation. The basement is of concrete. In this cellar Mr. Miller winters from 100 to 200 colonies with good results.

It is claimed that only a very small percentage of beekeepers belong to associations, although memberships are increasing; and considering the crops of the last season, and the territory covered by the Chicago Northwestern, this convention was a good one, chock full of real live interest.

A feature of the convention not printed in the program proved to be the most unexpected but none the less interesting.

During the forenoon session of the first day a man who looked like a prosperous farmer, about sixty years old, and who had participated in some of the discussions, was seen to move toward a closed piano in the corner of the room during a recess. Above the buzz of conversation was heard a lively tune, and the player was discovered to be the farmer beekeeper. He played none of the rag-time stuff of the present day, but the melodies which most people love. The name of the man at the piano is John Kleine, and his home is in Mendota, Illinois. He said that he had been playing the piano since he was a boy. He has a son and daughter, both musicians. The windows of his music-room open out into his beeyard; and when asked if he played for the bees as well as for himself and his family he said he did.

No one at the convention volunteered any remarks as to the effect of music on bees. The subject wasn't discussed; but we know of several instances in which dairywomen and dairymen believe in the efficacy of music for the cows at milking time.

Chicago, Ill.

A FINE FLORIDA BEE PASTURE

BY F. M. BALDWIN

A city engineer has little time for any thing but his regular task; but the close of the second week in October gave me a few hours off, and I took advantage of it to cross the river and hurry to the country south of Bradentown to see the bees that I had recently obtained from J. B. Notestein. I had bought four hives of him; and, acting on the advice of that expert beekeeper, C. H. Clute, I had divided three of them, one being too weak for successful division. My route took me just east of the creek where A. I. Root's ducks met the alligator. Just a little south of his chicken-yard was a great patch of gold gemming the landscape. A little further my eyes were gladdened by two more. Then there were others; and east of Bro. Ault's home yard was a great field of the cloth of gold. The wild sunflower was coming into full bloom. No nectar yet —but, ah the promise!

An examination of the hives revealed lots of brood and much new honey, evidently from Spanish needle, of which there were quantities on every side. To add to my expectations, goldenrod was beginning to

FIG. 1.—Colonies strong in honey above and below, and only six weeks on the stands, during which time each colony was divided twice.

show color, and that is usually followed by sweet myrtle, from which enough stores are gathered to carry us through to orange bloom in February and March. On my way back to Palmetto I plucked a big bunch of wild sunflower to prove to Mr. Clute that things were going well with my bees. But he had been further afield than I, and my tale was but a tame one to the one he could tell.

THE BIG SAWGRASS.

In the vernacular of South Florida, "a sawgrass" is a flat that is under water most of the year, and on which grows a wild grass with a fine saw edge. It is what covers most of the Everglades, and its presence means first-class land, rich and black. We have many sawgrasses in Manatee County—some of them covering hundreds of acres. The tract to which the title "The Big Sawgrass" is applied is about a mile north of Erie station, on the Seaboard R. R. It covers about a thousand acres. Too wet as a rule for fall and winter crops, it is given over to tomatoes in the early spring, and brings bountiful crops of them. The rest of the year it is covered with smartweed, thoroughwort, and wild sunflower. For the sake of brevity I shall call the last-named flower W. S. F., and the tract of land as the B. S. G. The last week in August Mr. H. L. Christopher, discouraged with the poor yield he was getting at Terra Ceia Junction, moved his bees to a live-oak hammock on the west side of the B. S. G. As Mr. Clute is the adviser of everybody in this section who works with bees, Mr. Christopher had taken him out that day to see what wonderful luck he was having, and to get his suggestion as to future manipulations. The tale he had to tell so far exceeded mine that I soon stopped talking and took to listening. Having first seen the light in that great State on the west bank of the Father of Waters that takes its name from the mighty Missouri, I had to be shown, and we agreed to run up to Erie Monday afternoon and look the B. S. G. over.

About 3 P. M. the train left us at the little flag station, and we walked north across the prairie through the saw palmetto. A mile and a half of that kind of thing grows monotonous, and we were not sorry to rest and look at the flight of booming bees. The 20 weak colonies had been divided and were now fifty strong ones. Hives from which colonies had twice been started were carrying a super, and the super was full of capped honey. Every hive of the fifty was heavy with stores, and seemed to be begging for combs or foundation—any old thing in which to place nectar. To us it looked almost like a crime that the beekeeper was not right there vigorously running an extractor. It was more room or a bad case of swarming, and that right then. Before he would let me snap a picture, Mr. Clute insisted that we take the liberty of sampling smartweed honey, which he said was of the best. A taste was all that was needed to convince me that it was A No. 1 white, of fine flavor, and should command a top price in any market. The picture was then taken, and we started to explore the B. S. G. *Explore* is the correct term. It was a wilderness of weeds, many of them far above our heads, and only by hard work could we make any headway through the tangle of heavy growth. The bees sailed over it with ease, carrying loads of sweets. But we could scarcely penetrate its dense jungle of grass and flowers. We knew that we were near the big drainage canal that had been completed within the last year, and thought that if we could get to it we could go east along its left bank to the head of the ditch. The steam-shovels had dropped the earth and marl fifteen feet from its banks, and we planned to travel along this spoilbank. But W. S. F. had

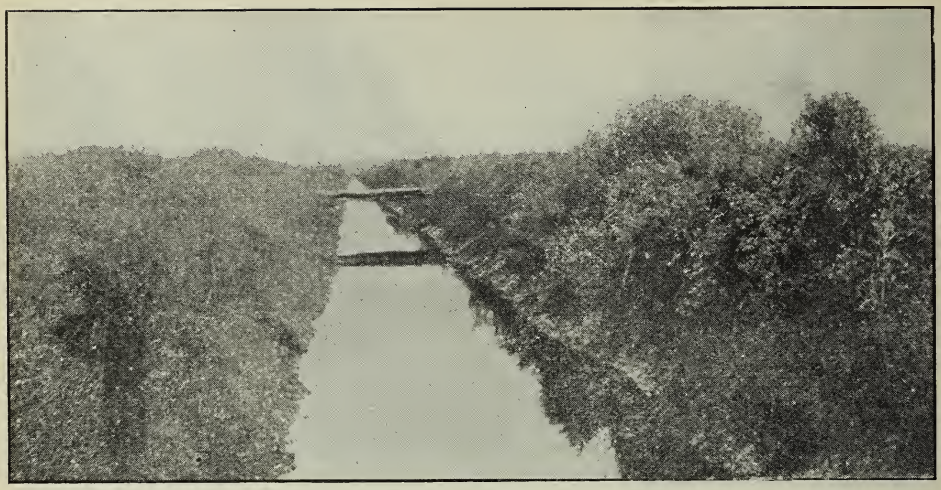


FIG. 2.—The big drainage canal in Florida, showing how the wild flowers crowd the banks.

complete possession of the spoilbank also. We could not make progress along it, and we dropped down into the ditch and walked at the water's edge on a slippery, sloping incline set at an angle of 45 degrees.

After what seemed an hour we came to a bridge and a road which led toward the railway. We climbed out of the ditch into the road, catching a snap-shot by the way. Everywhere there were vast stretches of nectar-bearing plants. In a comparatively open place Mr. Clute gathered a bunch of boneset and held it up while he posed beside a clump of W. S. F. that towered far above his head. The boneset and the smartweed had been in flower for more than six weeks. They looked as if they were taking a fresh start with a second crop; and the W. S. F. that gemmed with gold this rich region was just coming into its own. There were acres upon acres of honey—enough to keep a thousand colonies busy for months, and only fifty colonies at one corner. What a wealth of sweetness going to waste!

As we walked we discussed the wisdom of bringing bees to save a little of this vast store. Ours were doing well where they were. Spanish needle and goldenrod would give them pasture for a while, then would come sweet myrtle, on which they always grow rich. To move meant time, trouble, and expense. We thought we might as well let well enough alone.

Then we talked of the future. What about 1915? Should we keep the bees on their present stands until after the orange and palmetto flow, then get them in June to the B. S. G. for a summer and fall killing? The old beekeepers, like Poppleton, claim that there is no honey-flow on this peninsula in August. But we believe we can show them that the last word has not yet been said about Florida possibilities. The longer one stays in this great State the more he finds what it can do. Mr. Christopher had a summer flow, and he was at least a month late getting there as we figure it. There are other sawgrasses, and they should be as promising as this.

INTRODUCING BY SMEARING THE QUEEN WITH HONEY.

Mr. Clute had a fine year—more than 30,000 pounds and 100 per cent increase. If he carries out the project that we discussed he should be able to show three times as good a year in the one that is coming. Like all old hands with the bees, he has a store of practical knowledge that is very valuable to the novice. On one occasion, when I had a high-priced queen to introduce, he said, "Let the smoke method go. Put her in half a cup of honey. Don't be afraid to push her 'way down into it with your fingers. Smear her all over. The bees will lick her clean. Get her covered deep, and pour her and the honey into the top of the brood-chamber." My heart sank when I saw her apparently drowned in the honey smothered in sweetness. But the deed was done, and I could think of no way to get the sticky stuff from her body and wings. The bees would have to do it or she would be hopelessly smothered. So into the hive I poured her. When I opened the hive after several days I found that she had been accepted, and was doing all that one could desire of the mother of the colony. Not long after, I repeated the operation. This

FIG. 3.—Mr. C. H. Clute standing in smartweed and boneset, looking up at the wild sunflower.

time it was a virgin, and she was laying when next the hive was examined. Mr. Clute claims to have used this method for years without a single failure. It is easy; and, if safe, just what the fraternity has been looking for. Has anybody had an experience that has given a different result? Will some venturesome spirit please try it and report? It will probably prove simple, safe, and successful.

CALIFORNIA CONVENTION REPORT

BY P. C. CHADWICK

The California State Beekeepers' Association convention was held as scheduled, Dec. 16 and 17, at the Y. M. C. A., Los Angeles. The attendance was not up to the usual, which may be accounted for to some extent by the fact that rain and threatening weather continued throughout the two days.

The first session was called to order by the president, Mr. Farree, who gave what he called his message to the convention. Prof. Cook being present, but unable to attend the following day, was given preference on the program. His talk was both interesting and instructive, and he was given a vote of thanks for his remarks. He spoke briefly of the beekeeper and the horticulturist, after which he gave a long and interesting talk on honey as a food—its relation to the physical economy. Reviewing the food contents, especially sugar, in various food staples, and comparing them to honey was the main feature of the address. It was the first time the writer had had an opportunity to hear Prof. Cook lecture, and it was the best discourse he has ever heard at State conventions. The association needs more men like him on the program each year. There are plenty of members who generalize in their thoughts; but to such men as Cook one must look for scientific facts.

Following Prof. Cook's address the discussion drifted into the weight of honey per gallon, cause of granulation, etc.

The afternoon session was called together by Delos Wood, with Harry K. Hill acting secretary. Few were present at the beginning of the session; but Mr. Wood announced " One o'clock is one o'clock so far as I have ever been able to learn."

The Los Angeles County inspector, Geo. G. De Sellen, gave a brief talk while members were getting to the hall. An interesting paper on marketing was read, discussion following, which drifted into the requirements of the net-weight law.

Prof. Cook again spoke, this time his subject being the proposed foul-brood law, in which he warned the members against

trying to force the bill through to the Governor as now proposed. His opinion was that the bill would be vetoed if the provision which gives the president and secretary of the association control of the board by legislating them as members of the board with a controlling power. There was some disagreement with Prof. Cook's opinion, one member even declaring that the bill could be forced over the Governor's head; but a very strong opinion prevailed that Hiram Johnson is still very much in evidence as Governor of the State, and any such policy could not be accomplished.

Mr. Wilson, the legal adviser of the association, spoke briefly on legal lines, after which he was given a vote of thanks, as he had spent considerable time and energy on association work without charging for his services.

The secretary's report was then read and adopted. A report was made by J. G. Gilstrap for Prof. Lynch, who is at the head of the northern division of the present exhibit committee, and who will have the responsibility for whatever exhibit is made at San Francisco. The exhibit as planned is to be of an instructive nature.

On Thursday, the 17th, Delos Wood, acting as chairman of the convention, called the meeting to order promptly on time, George Brown acting as secretary. Few members were on time at the call. The reports of the county inspectors were taken up. All inspectors reported some loss by disease, black brood being the most prevalent, with better conditions existing. The Los Angeles County inspector reported the number of colonies for his county, normally 60,000, had dwindled to 30,000. Great improvement had been made by requeening. It was his impression that, by the end of another season, they would be back to their normal numbers.

The open discussion as to the management of the journal, to which a number of the members had been assigned, was eliminated from the program, due to the fact that no good could be accomplished, and that it was sure to precipitate a very warm discussion, although there was no mention of these facts except a warning by L. B. Andrews. Mr. Andrews has a knack of sighting these riffles and avoiding them.

The election of officers resulted as follows: Willis Lynch, president, with A. B. Shaffner re-elected as secretary. Seven candidates were nominated for the executive board with but three to elect. Harry K. Hill and J. G. Gilstrap were almost unanimously elected on the first ballot, with George Brown and W. H. Allen tied. Mr. Allen won out on the second ballot by three votes. This puts the control of the association in the North.

An interesting report by J. Edgar Ross on his litigation over keeping bees in the city of Brawley was read. An unmistakable case of bee-poisoning was also reported. The raising of a legal fund for the protection of beekeepers was suggested by Mr. J. D. Bixby, which met a hearty response, and was immediately acted upon. The plan is to assess each member three cents per colony, if need be, one cent to be available at once, the other two upon call. The convention adjourned, with the understanding that it would probably be called in San Francisco next summer.

MORE ABOUT CAUCASIAN BEES

BY J. J. WILDER

In commenting on my previous article about Caucasian bees the editor states that they were great swarmers when under test; and from reports from other beekeepers they had experienced about the same thing; and, going further, in one of the articles, that on this trial the greatest season resulted with them in an almost complete honey failure on account of their high swarming impulse.

Mr. Benton, the importer of these bees, made the statement more than once in his writings that they swarm too frequently, but that they are good honey-gatherers. Once in a great while a beekeeper might experience the same thing the editor and a few others have experienced with these bees; but even this might be said of what we call the best. This is surely not much ground upon which to condemn.

I have had years of experience with these bees in an extensive way, and have sent out several thousand of their queens to almost all parts of the United States. From the purchasers many reports have returned, and not one has reported the editor's experience. Yes, without a single exception, based on reports, every one is pleased with this stock.

I have had to discontinue the sales of these queens; and as I have none to offer I have no policy in this article except to bring out the facts about them as I have found them, and as others have reported.

We have found Caucasian bees almost

non-swarming under our methods of controlling them. We give them plenty of ventilation at the bottom of the hive, plenty of room at all times for the queen, and plenty of storing room, allowing no honey to be finished up next to the brood-nest during the height of the swarming season. The foundation is started and partly drawn out there, then raised, and another one given as long as they will draw out foundation. Then by our general method of frame manipulation we look over the brood-nest once a week during this time; and should any preparation for swarming be found we remove the queen-cells or divide them up, making two colonies out of one. The latter we do mostly, for we want the increase.

But there is only a very small part that ever attempts to swarm after the main honey-flow comes on, and the most of the increase is made on the first and second rounds in early spring. After the main honey-flow is on, only two or three natural swarms will issue from each apiary; and if we do not resort to frame manipulation the loss in bees is almost nothing.

What about these few natural swarms from these bees? They are not more than a mere double handful of bees, and not worth hiving. We have left off having the farmers living near our apiaries hive swarms for us, should they find any.

BUILDING UP.

This alone is almost a redeeming feature over the Italians. Artificial feeding is not necessary to bring this about if there are any outside resources obtainable.

It might be said that such rapid building up and great progress in this way, kept up throughout the season, might not always be in their favor. I have these bees in almost every kind of location in the South, and I never saw these colonies rise to such great pitch and go back. As a rule they maintain their strength, and store right on throughout the season. Of course progress may be slow at times when nectar is not so plentiful.

On the other hand, what do these great rousing colonies mean to the beekeeper who wants to spread his business, especially in the spring? Well, it means almost any amount of increase he wants, right at a time when it will be best to make it. In doing this I usually find two full-depth eight-frame hive-bodies full of brood, and very often a shallow extracting-super or two with some brood in them in addition. Very often I find as much as three bodies of brood, quite often four, sometimes five, and once in a great while six, with brood scattered through them. This may sound a little "fishy," or the limit on extremes; but as I have a number of honest men working for me who know this to be a fact I am not afraid that I shall be branded as untruthful. The beekeeper cannot afford to ignore this fact; for it is a matter of great consideration by any beekeeper who is not pleased with the stock he has.

AS HONEY-GATHERERS.

I have mentioned this feature of these bees before in GLEANINGS, and it is not worth while to dwell on it, for the interested readers can refer back a few numbers and understand more fully. But under this head there is one more feature I wish to mention, and it is a redeeming one.

I have often been astonished at the progress these bees would make in storing in just a few days when the main flow came on heavily and suddenly, owing to moderating weather conditions. Up to May 10 this season it looked as if the crop from gallberry was going to be a failure. The bloom was far advanced; nothing appeared in the supers, and blooming would soon be past. But suddenly a great harvest took place at just the last moment as the blooming period was passing off. They just simply went wild over honey-gathering, and I never saw as great energy manifested in bees. They were simply ready for it in every way. We have few days of a great honey-flow in the South, and sometimes these are reduced to very few, owing to adverse weather conditions. The remainder of the season the flow is slow or weak, and a marvelous thing must take place during the short time it is at its best.

FINISHING THE ARTICLE.

There is nothing more fascinating than to remove from two to five supers of well-finished honey from each colony of Caucasians. These dark smutty-colored bees, when smoked, move down between the combs, in appearance like a dark mantle folding down from over the honey, which looks like frames of compacted snow, so beautifully white and evenly finished is it. This feature makes them marvelous indeed.

Here in the South we produce much honey that is naturally thin in body, which, in the extracted form, ferments to some extent and gives dissatisfaction on the market. It results about the same in the comb form, the capping bulging and sweating, and having a greasy appearance. Such honey is simply too thin to be wholesome. This is found not only in the South but in the North as well. The Caucasians, as a rule, evaporate this seemingly naturally thin honey and give it a good body, and it is

much more wholesome. They are very slow to cap such honey—so much so that it looks as if they do not intend to. This is another good feature in them worthy of much praise.

THEIR ONLY BAD FEATURE.

The only thing that has ever been brought up against these bees that I consider worthy of argument is that they are bad to propolize or glue up the interior parts of their hives, and often deposit this glue in balls of considerable size in the most remote parts of the hive, and especially about the bottom, causing annoyance in frame manipulation. Since I have had these bees I notice that this bad feature is gradually leaving them. I have partly brought this about by breeding from stock less inclined to do this. But with good wide-open entrances, front and back, they make their deposits of glue there, endeavoring, seemingly, to close up these openings where it is easily removed, and we no longer consider this an objection. It has been the experience of all that this gathering of propolis does not occur except during a honey-dearth. Is not this evidence that they are great gatherers or very energetic foragers?

THEIR CROSSES.

I have crossed them considerably with my Italians, and I like the cross as well as I do the pure stock. In fact, the "dash" of Italian blood seems to combine the good qualities of both races, and make a great strain of bees, in some particulars preferable to the pure stock. It seems to a great extent to eliminate the desire to gather propolis and build burr and brace combs, and does not change their good qualities. The only bad thing about crossing these two great races of bees in this way is that the cross will gradually go out in favor of the Caucasians. This is accounted for by the fact that they raise more drones. In point of purity they are racially strong where Italians are weak. The reader should not think that I am condemning in the least the Italian bees. I have over one thousand colonies headed with pure Italian queens as near the $20 mark as they can be bred, and I expect to keep them and add more.

Cordele, Ga.

FIGHTING THE ANT INVADER

BY E. S. MILES

On page 944, Dec. 1, 1914, F. H. Cooper writes an interesting account of the insect and bird enemies of the bees in South Africa. I had kept bees a good many years, and in four or five different places, before I found there was an insect enemy formidable enough to make real trouble here in Iowa; and this experience which I shall relate may be so exceptional as to have no practical bearing. In fact, I think one would meet with it very rarely, and yet, as Mr. Cooper says, it might be interesting to read nevertheless. The enemy referred to must be about the same ant Mr. Cooper describes on page 945 as being bee-eater rather than a honey-eater.

It is a large black ant, although, if I remember rightly, the fore part of its body is dark red in color. It lives in great colonies that gather small sticks and rubbish, and make a mound from 1½ to 3 feet in diameter, and perhaps a foot or more high. They also work down into the ground a foot or more, and in cold weather they go down and do not appear until the warm days of spring. On the first real warm days of spring, however, the top of their mound is black with them, and they can be seen running in all directions, going mostly in certain paths or lines. These lines will go for several rods in all directions from the mound, the ants evidently traveling a regular route or trail. They are usually to be found in old brushy or woody pastures, hence are not often if ever found on farms that are rotated in crops.

In locating an outyard in the spring of 1912,in an old brushy pasture, never having heard of ants bothering bees in Iowa, hence thinking of nothing of the kind, I set a yard down right in the center of a circle of five or six monstrous colonies of these ants. I did not notice the ants until we had the yard all rigged up, and then we did not know that the bees could not win out in a "scrap" with the little black demons. On the contrary, we expected to see some ants very glad to go on about their own business shortly after we set the bees loose in this yard.

Near where one of these ant-trails ran through the yard we set what we considered a very vigorous colony of Italians—one that seemed very quick to notice and resent any intrusion into their domain, so we watched with somewhat pleasurable anticipation to see Mr. Ant get shown the way out when he (or she) began investigating the entrance to the hive. Imagine our surprise to see that, instead of Miss Bee grab-

bing Mr. Ant and showing him the door Mr. Ant ran right up to Miss Bee and grabbed for her! At this the bee turned, ran, and squealed, or whined, as Mr. Cooper calls it. To me it sounded like a squeal of fear. When the ants get hold of bees (they usually get them by the leg), the bees seem terrified, and usually fly away, ant and all. Sometimes a bee will get up courage enough to seize an ant, when they also fly away with them. I cannot say positively, but think from what observation I've had, that the ant never lets go. His grip is that of a bulldog, I believe, and while the bee rids the hive of one ant by flying, perhaps, far afield with him, yet it seems highly probable that the ant also holds the bee in a death-grip, so that she does not return. When we found that the ants would in a short time conquer the bees we got busy. We set one or two of the worst besieged hives up on stakes, painted around them with axle grease, and sent at once for kerosene. We took a sprinkler and sprinkled kerosene over all the ant-mounds, and along the main trails where they were traveling thickest, and set it afire. We used up probably a barrel of kerosene in getting the ants destroyed enough so that the bees were safe. We found that the remnants of colonies of ants would gather together and start business again, a handful or so seeming to be able to start a colony and recuperate again. But as the bees built up and became strong they would repel the few ants that would occasionally reach the hives from these. By prompt action we suffered no material damage to the bees the first season; and the next, while there were a few colonies of the ants, they were not populous enough to forage the beeyard, so the matter slipped our mind.

Last spring we again placed the colonies at this yard on their stands, and noticed the ants were again quite numerous; so we intended to go over and give them another round with kerosene; but something prevented our going to this yard again for a couple of weeks. When we did reach the yard we found such a state of affairs as exists in Europe. War was on. One colony was gone completely—not a bee in the hive. I suppose they had swarmed out, and the ants had dragged off the dead ones, as not a bee remained, dead or alive. Several other hives were about on their last line of defenses, being huddled up on top of the combs with the ants all about the entrance, and dragging down a bee here and there whenever they could get hold of one. We managed to save all these, however, by setting the hives on clean bottoms, thus getting most of the ants away, and stamping those coming and going to prevent their getting into the hives. We again got kerosene, and, setting some of the hives away, we sprinkled the leaves and grass around the hive-stands with kerosene and burned it off. This burned space bothered the other ants so that it checked the attack on the hives, and in the mean while we again gave their mounds and runways the kerosene-and-fire treatment. After that we kept a heavy stamper, such as is used for firming the ground before laying cement sidewalks; and whenever we were at that yard we looked up all the remnants of ant colonies and stamped them with this stamper.

Yet with all this warfare on them I think there are yet enough ants within reach of that yard to exterminate it within three years, if left alone. We think these ants are a little the most persistent and about the "nerviest" creatures yet encountered. We are now debating whether to go on fighting ants or move the yard.

Dunlap, Iowa.

A REVIEW OF TWO GOVERNMENT BULLETINS

Observations of the Temperature of the Honey Cluster in Winter

BY R. F. HOLTERMANN

Before me lie two bulletins, Nos. 93 and 96 of the United States Department of Agriculture. The former is by E. F. Phillips, Ph.D., and his assistant, George S. Demuth, Washington, D. C.; the latter by Burton N. Gates, Ph.D., now of the Massachusetts Agricultural College.

In my estimation these two bulletins contain the report of some of the very best work ever done for beekeepers by government agricultural experiment stations. There is abundant room for the beekeeper to find fault with much of the work done by various agricultural departments, if that work is supposed to be done in the interest of beekeepers, but the investigations reported in these bulletins are of a nature bearing directly upon a problem which is of the utmost importance to every northern or northerly beekeeper. The investigations and results recorded are none the less valuable because they (with scarcely an exception)

fully concur with the conclusions of our most careful beekeepers who have had time to make observations on their work. They agree with my own deductions, and give me further food for thought.

LOSSES FROM BAD WINTERING.

Dr. Phillips very well puts the results of the experience of the business beekeeper in wintering as leaving it "one of the most perplexing confronting the beekeeper, especially in the North," and attributing it to being "well nigh impossible to determine what external conditions are most favorable except by the gross results of experience."

Dr. Phillips is certainly not given to exaggeration when he states that "American beekeepers lose thousands of dollars annually in wintering, from the actual death of colonies, and even still more from those colonies that do not die, but are reduced in numbers and vitality." Few well-informed beekeepers would cavil with him if he multiplied the figure by ten.

CONDITIONS THAT INFLUENCE.

He states: "The factors influencing the welfare of the colony and the behavior of the bees are numerous, and closely interrelated. Of the chief ones may be mentioned external temperature, food, ventilation, humidity, the condition of the colony at the beginning of winter, and various forms of irritation."

The above points, in my estimation, pretty well cover the ground; and during a conversation I had with Mr. Morley Pettit when the experiment apiary was at Jordon Harbor, Ontario, giving him my views that the apicultural investigations ought to be carried on at the Ontario Agricultural College, Guelph, I stated that investigations in wintering ought to be carried on; that this should be done in winter repositories in which temperature, humidity, and ventilation would be absolutely under control.

The work in Ontario has not developed along the line that many of us hoped it would, probably due to a lack of funds necessary to grant for experimental work of the above nature.

DISTURBANCES.

Dr. Phillips and Mr. Demuth show in Bulletin 93, page 2, by temperature records taken from carefully placed electrical thermometers (which are much more sensitive and accurate than mercurial thermometers), that "disturbances of the colony may influence the temperature of the cluster for a considerable period, often more than one day."

In my cellar wintering I always considered it a small calamity to show any one through the bee-cellar. Bees are much more sensitive to environments than we are. They can scent blossoms miles away. If we walk about a hive in summer without touching it the bees soon show disturbance. In short, their nervous organization is much more sensitive than our own. They are compared to us as the electrical thermometer is compared to the mercurial thermometer for recording temperature, only more so. The disturbance of colonies leads to changes of temperature which are the result of the increased consumption of stores, and, no doubt, lost vitality in the bees. Disturbances should, therefore, be avoided. When visiting the bee-cellars of others I have aimed at creating as little disturbance as possible, and coming out as soon as practicable.

DISTURBANCE FROM NEIGHBORING COLONIES.

The authors state, page 3, "Disturbances of outside colonies have also been found to influence their behavior in a pronounced manner, especially in cold weather." This is exactly the conclusion I have come to from frequent experiences; and to obviate this as much as possible I have said that every colony in a cellar should have a distinct base upon which to rest to prevent communication with others. Benches or long boards for cellar stands are bad. If we take a hive of bees, and place thereon four colonies, should one colony winter badly and become restless that restlessness is likely to affect injuriously all the bees in the pile, even communicating it to other piles in the proximity, doing damage in proportion to the length of time the bees have to remain in the cellar. My deductions were the result of outside observations; theirs, the result of the careful readings of temperatures, which is much more satisfactory and conclusive. For the same reason I condemn strongly a cement floor, also a board floor if it can be avoided. Separate stands should be used for each pile of hives. They are best on an earth floor with as little adhesion between particles as can be obtained, sand being better than clay. Then do not put too many bees in the cellar. I feel quite sure that in the cellar I built, 25 x 50 ft. outside, 7 ft. in the clear, 200 colonies will winter better than 400 or 500. I have always found some colonies more restless than others.

BROOD-REARING IN WINTER.

The authors, page 6, state, "The rearing of brood in winter causes a marked increase in heat production, and constitutes a condition which may become one of the most disastrous that can befall a confined colony."

On page 7, following this remark, we find the following: "If brood is reared, the work of the bee is necessarily enormously increased, and their vitality is correspondingly decreased. So far as evidence is available in this work, the colony is not fully recompensed for this expenditure of energy by an increase in the strength of the colony by bees thus reared." To this I would agree —activity results in reduced vitality; and nature, to supply this loss, brings on brooding to replace the lost vitality. Disturbing the colony results in a rise in temperature of the colony. If the bees have bad stores they will become restless, and the temperature of the cluster will rise; and a continuance of this will mean pronounced loss of vitality and brood-rearing. But with the confined and increased consumption there is an accumulation of feces in the bowels of the bees; the colony becomes more active, and this activity tends to dysentery. Take a colony with normal stores; confine it, then disturb it or place it under disturbing conditions, and it will soon have dysentery. In brooding the increased consumption of stores tends to fill the intestine with fecal matter; and that activity, for any length of time with flight, is not normal. Again, I know of no young animal which, during the building of its body, does not accumulate intestinal refuse of which it has to get rid soon after its own independent activities begin. I admit I do not know very much about this; but I have noticed the young bee void what I thought (and think now) corresponds to this; and my impression is that a young bee should have a cleansing flight soon after emerging from the cell.

THE LONGER THE CONFINEMENT THE HIGHER THE TEMPERATURE.

The observations in the bulletin show a rising temperature as the season of confinement is prolonged, and, with that, brood-rearing. This is just what we should expect. However, let me say here that the observations were taken with colonies which, owing to their location at Philadelphia, could have frequent flights throughout the winter. I venture to say, judging from the frequent examination of colonies in very early spring, that, the better the bees are wintering, the less brood will be reared, and the fewer stores will be used, other things being equal, and the less loss of vital energy in the colony.

THE INFLUENCE OF STORES—HONEY-DEW.

On page 12 we find: "In the case of colony 3, fed on honey-dew honey stores, the factor which caused more heat to be produced evidently increased much more rapidly. As stated previously, honey-dew honey is a poor food for winter, and is so recognized. It contains the same sugars as honey, but contains in addition a considerable amount of dextrine, the particular lot fed to colony 3 containing 4.55 per cent, while good honey contains only a fraction of 1 per cent. From the evidence at hand it appears that dextrine cannot be digested by bees; and whether or not this is the explanation, honey-dew honey causes the rapid accumulation of feces, which usually results in the condition known as dysentery, in bad cases of which the feces are voided in the hive." The above, so far as the effect of honey-dew stores is concerned, can be vouched for by a great many northern beekeepers, and we may see the fruit of some such stores the coming spring.

Again, page 12, we have the following: "It therefore appears that the accumulation of feces acts as an irritant, causing the bees to become more active, and, consequently, to maintain a higher temperature. We are, therefore, justified in believing that the cause of poor wintering on honey-dew honey is due to excessive activity, resulting in the bees wearing themselves out, and, ultimately, in the death of the colony." This exactly coincides with practical results; and the reason why colonies which have not wintered quietly may spring-dwindle a great deal more than well-wintered colonies is because they have less vitality left, and succumb more readily under adverse conditions.

DYSENTERY.

On page 13 we find: "It therefore follows that excessive activity causes the consumption of more food, resulting in turn in more feces, so that colonies on poor stores are traveling in a vicious circle, which, if the feces cannot be discharged, results in the death of the colony. In the work here recorded no attention was paid to the theory that dysentery is due to an infection, since there is nothing in the observations made that lends any support to that idea."

The above confirms my opinion. What might make some believe that this dysentery is infectious is that it is liable to break out in colonies in the vicinity of the one affected; but as these temperature observations record, and as my previous observations lead me to believe, it is the disturbance which the colony with the dysentery communicates to others in the vicinity which causes activity, increased consumption of stores, brood-rearing, the accumulation of feces, and dysentery.

ACTIVITY IN CONFINEMENT.

On page 13 we again find: "While the activity of the cluster is greater at some times than at others, there are not, as has

been held, regular intervals of activity at which the colony rouses itself to take food. At no time is a colony kept at a room temperature of 45° F. or less in a condition which can be characterized as inactive. Presumably the reported intervals of activity have occurred when the colony made a noise due to disturbance by the beekeeper." I have never noticed colonies entirely inactive. That means a good deal; and I never saw a colony in which there were *no bees* moving. I never decided just how a colony took its food during the season of activity; but where the bees of a colony appeared constantly on the *qui vive,* and ready to fly at the light the moment it appeared, I decided it was wintering badly.

LONG CONFINEMENT AND POOR FOOD.

On the same page the authors state, "Keeping these bees in a cellar protected them from low outside temperature; but the lack of opportunity for a normal ejection of feces caused a condition more serious than extremely cold weather." Again, "Poor food is evidently a more serious handicap than low temperature. We must remember that in many sections bees, even if wintering outside, owing to continuously low temperature, are unlikely to have a cleansing flight during the entire winter. In my own section of country (Brantford) they generally but not always have a flight during midwinter or early spring.

FORMATION OF CLUSTER AND POSITION OF THE INDIVIDUAL BEE.

The formation of the cluster is then dealt with. We find the following on page 14: "The position with the heads inward is typical, except when condensed moisture drops on the cluster, as it often does in cool weather, when the bees at the top turn so that their heads are upward. The bees in the outer shell are quiet except for an occasional shifting of positions. Inside this rather definite shell the bees between the combs are not so close together, nor are they headed in any one way. . . . When the combs were separated the circle of bees in the shell was clearly observable. When a comb from the center of the cluster was shaken, the active bees in the center of the circle dropped off readily; and those in the outer shell, which were somewhat sluggish, were removed with more difficulty. After this was done, those occupying empty cells in the center of the sphere backed out of the cells and were shaken off. Finally, those occupying cells in the borders of the sphere backed out, showing a well-marked circle on the combs."

Any observing person who has pulled a cluster of bees apart in cold weather by removing the combs will readily understand the above graphic description; and those who have not done so will have to read carefully several times before they can enter into the degrees of activity in the various parts of the cluster.

No doubt the hair on the abdomen of the bee makes such a cluster almost a non-conductor of heat. To do away with the dropping of moisture on the bees I am an advocate of absorbent packing above the frames.

VARIATIONS OF TEMPERATURE.

In Bulletin No. 96, page 12, Dr. Gates states: "During the period of most protracted cold, from Jan. 23 to Feb. 1, when the outside air ranged from 0° C. (32° F.), thermometer f followed the outside temperature closely, and the course of the two curves is practically the same. In some cases, as, for instance, on Jan. 26, thermometer f was slightly lower than the record of the outside air, which may possibly be explained by lack of ventilation, or stagnation of the air of the hive."

We must remember that these colonies were not in what beekeepers call winter-packed hives, and that, therfore, the air changed more rapidly than with packed hives; and with the more rapid circulation of air there would be a greater variation between the cluster temperature and the air below the cluster. Again, a variation of even only a few degrees, and that having to be kept up for the entire winter, would draw heavily upon the honey stores and also upon the vitality of the bees which have to generate the heat.

A HUMMING NOISE.

It has been a subject of controversy as to whether bees wintering well make any noise in the repository. I never entered my cellar (containing sometimes as many as 500 colonies) without hearing some noise; but I thought that perhaps it came from colonies more aroused than others. The authors on page 15, Bulletin 93, state: "That higher temperature may be produced, greatly increased muscular activity is required; and in colony C in cold weather, bees in the center of the shell of insulating bees were seen fanning vigorously, and executing other movements, such as shaking and rapid respiration. We thus have the paradoxical condition that bees fan to heat the cluster in winter as well as to cool the hive in summer. Observations of this kind were repeated beyond number; and the theory of the method of heat production is entirely supported by the repeated observation of a humming noise from the cluster during cold weather." The difference in the two above conditions is that in winter the heat is

conserved, while in summer it is driven away.

HOW HEAT IS GENERATED.

The following, page 15, seems almost incredible. "A few details of the observations on colony C may be of interest. For example, one bee was observed fanning vigorously for 7½ minutes (9:53 to 10:00½ A. M., Jan. 23), while the other bees kept a space cleared for it. The temperature of the nearest thermometer rose ½° F. during the time. At 9:52 this thermometer was almost a degree cooler than at the time of greatest heat during the fanning." Think of it! one bee raised the temperature ½ degree; but perhaps the area was very restricted, the thermometer being close to the bee. Or by the fanning the air may have circulated so as to draw increased heat to the thermometer.

EXPANSION OF CLUSTER.

Dr. Gates, on page 17, states: "In watching this colony it was found that the density (and, consequently, the shape) of the cluster varied from day to day. When the air outdoors was warm, the cluster expanded; with cold, it contracted. The expansion usually did not cause the bees to cover more frames, but caused them to cover more completely those frames which they were occupying. Thus the expansion was usually downward toward the bottoms of the frames and in the direction of the entrance. With cold, the bees receded from the bottoms of the frames and from the top-bars."

Let me suggest that the reason why the expansion of the cluster was upward and downward, and not sidewise, is because of our artificial combs built on comb foundation, which does not enable bees to move sidewise to any extent unless the cluster reaches above the top-bar or below the bottom-bar. In my estimation this is a handicap in wintering in modern hives and on straight combs. I should like to see the experiment conducted with box hives where the bees, when left to their own devices, will leave passages in combs so the cluster can expand or contract in every direction without leaving the cluster. The above is also a handicap when the bees want to change places in the cluster, and particularly when there are only a few bees on the outside combs.

On the same page we find "One of the most surprising observations was the apparent interchange of bees from the inside of the cluster with those on the outside of the cluster. As the writer watched the cluster, the head of a bee would gradually appear from below the bees forming the shell of the cluster. Finally this bee emerged, and took her place with the others on the outside. Similarly, bees were frequently seen to disappear into the mass."

I have written about this interchange and pointed out the desirability of having winter passages in straight comb so the change of position could take place freely. I also remember having a colony in a cellar where, by means of the number of bees showing under the bottom-bars, I could tell to a degree the temperature, and I verified this many times that winter, and compared the cluster to the mercury in the thermometer in the influence of temperature upon it.

The bulletins have many records of temperatures; but I have avoided dealing with them, taking only some of the practical conclusions reached. Would that we had the record of more such valuable work!

Brantford, Canada.

"PEACEFUL ROBBING," WITH SOME REMARKS ON COLONY ODOR

BY RALPH C. FISHER

In regard to friend Byer's experiences as given on page 839, Nov. 1, the following will account for the case of robbing that resulted from his feeding bees. The outcome of it is hardly one of unusual character, but, rather, one wherein favorable conditions were inadvertently supplied to an insect always very willing and ever ready to take advantage of them. The season of nectar-gathering had long been past. The bees had taken on a restful mood, or, if you please, were manifesting a real inclination to stay at home. They were thus inactive because of no important duties to perform. A visitor to any apiary on these scattered balmy days, though many bees are on the wing, will hear no industrious roar as when the nectar season is on. It was normally quiet, therefore, when Mr. Byer gave colony No. 8 that heavy feed of sugar syrup. It being a populous colony, the amount of feed large, and perhaps warm, the bees were attracted at once. I venture to say that there was a spasmodic return to general activity the moment bees began forcing their way into the dormant cluster in the brood-chamber. The result is likened unto the city fire department. On the sound of an alarm all is hustle and bustle, but in a systematic manner. There was probably a grand rush of

bees afield to ascertain the whereabouts of so much sweets. At the same moment there was a rush for the feeder. Plenty of feed at this late day certainly creates maximum excitement for the time being. Bees on the wing found the fields dry and dreary, and returned, therefore, only to go out again, then in an hour or so joined the throng making inroads on the feeder. The outward excitement having subsided, the restless thousands became reconciled to the one point of interest.

Thus Mr. Byer transformed his heretofore peaceable colony No. 8 into a teeming mass of robbers. If not the regular orthodox stealing one from another, it was essentially the same to the bees. Then, again, bees having once participated in such wholesale storing of sweets, the event is long remembered, especially by those of an advanced age. Aside from this there are always several members of a normal swarm continually going hither and thither, persistently seeking any sort of sweet that may be had with less effort than going afield. Vigorous colonies light in stores have this habit particularly—a fact easily proven by letting sweets lie about. Exposed sweets mean robbing, and robbing means a world of trouble; and if conditions are peculiarly favorable it means the total destruction of the apiary.

Now, a few days after Mr. Byer fed No. 8 he likewise fed No. 12. As the bees of No. 8 were all too keen for sugar syrup it was the natural course of events for them to seek out and discover the feed on No. 12 hive. Those old bees previously mentioned did the trick.

At the moment the bees of No. 12, with honey-sacs overfull, the brain absolutely excited, nerves all aflutter, the colony became practically the same as No. 8 as to condition. At such moments of excitement, orthodox rules and regulations are immediately discarded. Such colonies maintain an open doorway, so there was no opposition offered the bees of No. 8 when they came to raid the feeder of No. 12. According to impulse both colonies were of the same opinion, and the source of supply so abundant it needed no protection. Robbing bees are always too much inclined to rob rather than to resort to protective methods, and, like human beings of the evil class, strangely submit to one another's company. Mr. Byer rightly terms the episode peaceable robbing.

That night the bees of No. 8 returned home to dream of the fine time they had, and of what they were going to do on the morrow. The nights being quite cool it is very possible the bees of No. 12 became partially if not wholly quiet during those hours, although with minds not unlike those in No. 8, for there were sweets yet in the feeder. However, next morning Mr. Byer removed the feed and feeder on No. 12; and as soon as it warmed up sufficiently activity began, and the loss of the feed became known at once. Consternation prevailed. The bees, being so anxious to steal, started right in to relocate the feeder. They then knew the exact smell of it; and the least aroma of that nature caused them to make a close inspection. Thus there was a second excitement, but of a different character, and bees of both colonies were again doing the same thing.

As before stated, both colonies were in an absolutely abnormal state with all orthodox laws repealed. Thus when the feeder was replaced on No. 8 the bees of No. 12 soon were at work on it through communication —rapidly so, from the result of previous robbing of their own feeder. Another thing, No. 8 had an abundance of unsealed sugar syrup in their combs, and it is very possible the bees of No. 12 discovered it on the day No. 12 was fed. At this juncture a feeder was replaced on No. 12 so that both had feeders. This act would naturally divide the excitement by establishing two points of interest, with the result that both colonies would gradually quiet down. The passing of a night would cause a return to normal conditions—more perfectly so if both feeders became dry at about the same time.

However, one can rightly suppose the bees of No. 8 and No. 12 continued to rob each other to a limited extent for some time. The most remarkable part of the episode is the fact that other colonies in the yard did not seek a hand in the excitement. The bees of No. 8 very probably first discovered the feed through the hole in the gable cover; and when the location of sweets became established they used the entrance at will. Mr. Byer admits No. 8 had been the lightest in stores, therefore more easily incited to rob. The majority of his colonies, amply and naturally provided for, were in a contented condition, with very few bees on the wing, these either playing or carrying water, and not so much inclined to rob.

As to colony odor in this case, the idea is a lost quantity. There is not a single factor in the case to warrant the use of the term. And here it might be said, though bees often manifest evidences of recognition through the influence of odor as regards bees and queens, the use of the term "colony odor" cannot be justified when applied to the

actions of complete or normal colonies. To prove the uselessness of the term, simply exchange frames of sealed or unsealed brood; make colonies queenless; introduce queens; make all sorts of various exchanges, when, in every instance, if odor has any influence over them at all the same will be found to involve singly the bees, the brood, the drones, or the queen. Therefore colony odor has very little to do with the affairs of bees and their habitat.

Philadelphia, Pa.

ANNUAL MEETING OF THE MARITIME BEEKEEPERS' ASSOCIATION

BY E. L. COLPITTS

The annual meeting of the Maritime Beekeepers' Association took place in the board room of the Winter Fair building on Tuesday, December 7. A large number of the members, well representing the maritime beekeepers, were in attendance. More interest was shown than at any previous meeting. The auditor's report showed the association in good financial condition.

Reports of the season from many members were heard with interest. The presence of disease was reported from so many sections that it seems as if American foul brood has established itself already quite extensively in the maritime provinces. The honey crop had been light, clover not yielding in many sections. As far as reported, an average of 75 lbs. per colony was obtained.

J. A. Clarke, Charlottetown, P. E. I.; I. C. Craig, Amherst, N. S.; W. S. Blair, Kentville, N. S.; E. L. Colpitts, Petitcodiac, N. B.; and W. W. Baird, Nappan, N. S., spoke on the prevalence of bee diseases in the maritime provinces. Mr. Sladen, Dominion Apiculturist, had pointed out to the local governments the importance of stamping out American foul brood before it became established. As yet nothing had been done. A resolution was unanimously passed, urging upon the local governments the importance of passing foul-brood acts, and having them enforced by competent inspectors.

W. S. Blair, supt. of the experimental fruit station at Kentville, N. S., spoke at some length on the importance of promoting the beekeeping industry, telling how it could be best done by the different provincial fruit branches. It was decided to present the importance of such a move by the fruit-growers, by sending a representative to each of the fruit-growers' conventions which meet in January. Messrs. W. S. Blair and B. W. Baker were appointed as representatives to attend the Nova Scotia fruit-growers' convention at Kentville, and E. L. Colpitts was appointed representative to attend the convention of the New Brunswick fruit-growers at Fredericton.

The following officers were elected for the ensuing year:

President, B. W. Baker, Amherst, N. S.

Vice-president, W. B. Wallace, Newport Landing, N. S.

Sec'y-Treasurer, E. D. Craig, Nappan, N. S.

Vice-president for Nova Scotia, Knox M. Lodge, Mapleton, N. S.

Vice-president for New Brunswick, W. G. Asbell, Sussex.

Vice-president for Prince Edward Island, H. Newson, Charlottetown.

Auditors, W. W. Baird, Nappan, N. S., and W. G. Asbell, Sussex, N. B.

Standing committee on exhibitions and prize lists, E. L. Colpitts, Petitcodiac, N. B.; G. W. Chappell, Amherst, N. S., and W. N. Tanton, Charlottetown, P. E. I.

Petitcodiac, N. B.

BEEKEEPING IN SOUTHEAST OKLAHOMA

BY FRED MYERS

Here in southeast Oklahoma we have, I suppose, a good average location for beekeeping; but it will be better when fully opened up and cultivated in the crops that should be raised Along Red River (the line between Texas and Oklahoma), lying east and west, is a strip of black prairie land, rocky in spots. There are some good farms, and on many of them alfalfa is being sown. Adjoining this on the north is rolling sandy timbered land, reasonably productive, with freestone water a few feet below the surface. On the whole it is a very nice-looking place to those hunting a location in the Southland.

But the country has been hard hit by the

present low price of cotton, which too many have been engaged in raising, instead of in giving more attention to food and feed crops, and orchards with hives scattered among them.

But the people see their mistake, and are casting about for something to add to the income on the farm. With the attention now being given by the United States Department of Agriculture, and all up-to-date farm papers, to both the honeybees and to sweet clover, we expect these to come into their own here and elsewhere.

Few places, I think, have more bees than this, considering the amount of modern equipment to be found here. There are hundreds of colonies in gums and boxes.

Our location is on the edge of the sandy country, so we should get the benefit of both sides. Our greatest discouragement has been the drouths of recent years. Usually the bees can start brood-rearing very early, the alders along the marshy branches furnishing pollen the first of February. The maples soon come into bloom, giving pollen and honey; then fruit-bloom comes in March; following this the black-gum and holly bloom, which yield nectar freely if weather is right—damp and warm; but, of course, we expect weather conditions to interfere with the bees' work so that we get only a part of the benefit of these different sources.

It seems that the greatest need is something to furnish a good flow during midsummer, when we get the fine honey. I am not thoroughly acquainted with every thing upon which the bees depend, but I know cotton here is very uncertain, although extensively cultivated. It will be greatly reduced in acreage hereafter, and we are not sorry, as it is also a scant yielder with us. We have kept bees four years, and had all to learn; hence getting experience has cost us something. But we have always won some profit above yearly expenses, besides having honey for the home table. This alone is compensation for the work with bees. What kind of beekeeper would one be if he were not a honey-eater?

I also won both first premiums last year at our county fair for best comb and extracted honey. Besides, I may mention, but will not attempt to describe, the pleasures of beekeeping.

Recent articles in GLEANINGS on new principles in hive methods, etc., have been interesting reading, as we have been thinking of the possibilities of a larger hive; but the wintering problem is no argument with us.

Our ten-frame hives we think are hard to beat. We use supers the same depth, all frames alike. We put full sheets of light brood foundation in these by the melted-wax one-fourth-rosin method. This does not fill the frame; but with proper management we get good combs joined all around, with not too much drone comb.

I am convinced the drones are of much more value than they are usually credited with, for this reason: We select males in improving anything else, and get the desired results, giving a large share of the honors to them; but with either good or bad results from queens, the drones, or male bees, are forgotten usually. Should we not at least divide the honors with them?

For fastening in foundation I use a china cream-pitcher, and think nothing is better than one holding about a pint. We set this on a warm stove with a paper-covered table near, having on it a pile of frames and some empty hive-bodies to receive frames when filled with foundation.

Taking a sheet of foundation I place it in the center of the top-bar of the frame which is held bottom upward with the further end highest, so the stream of melted wax will run freely along the edge of the foundation, fastening it to the bar. I then change the ends of the frame and wax the other side of the foundation the same way. These frames are not wired, and do not need to be. I work all best combs into brood-chambers.

Valliant, Okla.

Francois Huber

BY GRACE ALLEN

Brave? Who's brave? Have you heard of Huber,
Brave blind Huber, there among his bees,
Delving in their mysteries, searching out their secrets,
Seeing countless hidden things that only spirit sees?

"Blind? What's 'blind'?" cried the young stricken Huber.
"Nevermore to see!" moaned his fast-failing sight.
"Always I shall see!" answered Francois Huber,
"Never, oh! never, need a soul lose its sight!"

He wedded with Love; Devotion was his servant;
These two looked and told him what they saw,
Offered him facts, and Huber's clear vision
Gave back truth, gave back law.

Blind? Who's blind? Not a man like Huber!
Soul looking forth through its own white light;
Give us, O God, men as clear-eyed as Huber,
With vision as sure as this blind man's sight!

Heads of Grain from Different Fields

The Backlot Buzzer

You can just bet a big red apple that anybody who is fortunate enough to be nailing ten-frame doul le walled hives together these long winter evenings isn't going to lose any time playing peanuckle and dominoes.

Missouri State Convention Report

It may interest many of the readers of GLEANINGS to know about the Missouri State beekeepers' meeting held at St. Joseph. In many respects it was the best meeting the writer has ever attended. We had visitors from Indiana, Illinois, Iowa, and quite a number from Kansas. Mr. N. M. Jennings, Franklin, Ind., gave a good talk on wintering; and Frank C. Pellett, Atlantic. Iowa, one on preparing bees for winter, that was most efficient. Then of those of Kansas was Dr. Boher, a man 84 years young, and quite a number of others whose names we do not now recall; also M. G. Dadant and Mrs. H. C. Holmes, Belle View, Ill., and our own beekeepers from Missouri. We had a good attendance and an attentive audience.

We wish to mention Dr. C. R. Woodson, a man of large stature and extensive practice, and who is also interested in horticulture, who gave a most interesting talk on spraying. He fully agreed with beekeepers not to spray during bloom, as also did our Dr. Haseman, of the experiment station, an entomologist. It would take too much space to state all the good things we had.

It was decided to reorganize, and change the name to the Missouri Beekeepers' Society, and to incorporate. We hope thus to reach more beekeepers, and to accomplish more for beekeeping in the State. We will also try again to get an amendment to our foul-brood law to make possible deputy inspectors. The necessity for deputies was quite apparent, as our present inspector had a long spell of sickness the past summer, and right in the time when the work was needed the most. We are sure that much more work can be accomplished by deputies, even if we do not secure any more appropriation, as deputies can be on the spot all the time, so that the inspector will not have to travel all over the State to reach the work. The deputies are to be under his control. We tried for this two years ago, and our amendment went through the senate with only one dissenting vote, and lacked one vote of a constitutional majority in the house of representatives. We feel that we can get what we want this time. It is surely needed if we are ever to get control of foul brood in our State. We now have a good foul-brood law, except that we need more help. Deputies, we think, will do the work, or at least much more than any one man is able to accomplish.

The new officers elected for the coming year are J. W. Rouse, Mexico, President; W. F. Cox, Garden City, Vice-president; J. F. Diemer, Liberty, Treasurer; Austin D. Wolfe, Parkville, Secretary. Mr. Wolfe is connected with the Parkville College; and as he is an ardent Y. M. C. A. man he made arrangements for the beekeepers to take dinner at the Y. M. C. A. building. We certainly had a good dinner and a fine time.

Mexico, Mo. J. W. ROUSE.

What Constitutes an Ideal Wheelbarrow?

There have been many different kinds of vehicles invented and illustrated for handling honey and empty supers about the beeyard; and although a wheelbarrow seems to be the favorite with most beekeepers, I have not yet seen one illustrated that would suit me. Most people think all wheelbarrows must have the front slanting forward; but that is where mine differs from all other so-called handy barrows for a beeyard. I made mine 20 inches wide at the narrowest part of the bottom, and long enough to take three eight-frame hives, and the front is square from the bottom, so the hives will all stand on top of one another, and have no tendency to slip out of place, and that is quite a consideration when bees are inclined to rob. I can take nine empty supers in one load; but when I am taking honey in I place the hives lengthwise of the barrow so the combs will not have any tendency to crowd to one side. There is a shelf on the front for the smoker above the wheel, and a narrow box or pocket between the handles to catch any small bits of comb or wax. The front is made high enough so it will catch the third super, say about 22 inches.

REPORTS WANTED CONCERNING VENTILATED BEE ESCAPE BOARDS.

There is one thing I should like to get a number of reports on, and that is the ventilated bee-escapes, as to whether they work quicker or not. I made a lot last season, but the season was so poor I should not like to pass an opinion on the escape. The ventilating part is all right, but will they work as quick? I have my doubts; but I should like to hear from those who have given them a fair trial.

A WORD OF APPRECIATION FOR THE INDEX.

I can't help writing a few lines of appreciation for the GLEANINGS index for 1914. It is a pleasure to hunt up any article in this index. For the last several years I hated this job; for with the index as arranged it was a good deal like hunting something out of a barrel. I have many times

thought of trying to get you to change to the present form, but I didn't want to be called a chronic kicker. There is only one thing worse than the old index, and that is no index at all.

I have been shining as a kicker against our *Canadian Horticulturist and Beekeeper*, as the publishers refuse to print an index. It certainly reduces the value of any journal to be without an index. I know in my case I have many times wanted to look up information on a certain point, and have taken down 15 or 20 journals (I bind all mine), and it is wonderful the amount of information a person can get by just looking at an index.

Forest, Ont. I. LANGSTROTH.

Decoy Hives in Rhode Island

I was very much interested in the article relative to decoy hives by our good friend Dr. A. F. Bonney, published in the *American Bee Journal* some months ago, so I decided to try the plan. I procured at a local grocery a dozen wooden boxes about the size of a hive. I tacked in some slats to act as frames, and to one I tied a piece of comb.

I made an entrance at one end about one inch by eight, and made a door that would close down over the entrance, as indicated by the doctor's drawing in the article. To keep out rain and dampness I tacked a piece of cheap enamel cloth on top of each box, and tied on the cover with strings.

As there is a great risk that each box may not catch a swarm, or may even be stolen, one has to try every way to make the expense as light as possible.

Several of these boxes were placed in the crotches of apple-trees. One was placed on top of a ledge of rock; another in what was once a window in the ruins of an old stone mill; a third in a pine tree; and, the last of all, on a partly tumbled-down chimney where a farmhouse once stood. In fact, all of these boxes were set in the country, and mostly on deserted farms.

Bee-hunters are quite plentiful through the country districts of Rhode Island, hence setting bee-boxes is a little risky. Even though the owner's name may be on the box, it is not always respected, because a colony of bees that costs nothing is usually very acceptable to almost any one.

Of the twelve boxes that I put out, the one placed on the tumbled-down chimney did the trick and captured my only swarm. Last spring bees did not swarm very much in the country districts of Rhode Island. One man whom I know has eleven colonies of bees in the old-fashioned box hives, and had only three swarms before the first of July, while the others swarmed later on. One of the best bee-hunters in the State informed me that he and his companion have located only four this year, while they located ten last year. In fact, I am of the belief that here in New England wild or escaped bees are growing scarce.

From my experience in setting bee-boxes, I do not think it pays here. I also believe that a box, to have any chance of catching a swarm, must be set in a very conspicuous place. Then in such a place others may appropriate the good luck before the owner does.

Providence, R. I. GARDENER B. WILLIS.

Bees Plug the Horizontal Openings in the Top-bars with Wax

The letter on page 1000, suggesting horizontal openings through the top-bars for winter passages for the bees, reminds me of some experiments that my father, the late S. T. Pettit, tried many years ago. I can still remember seeing combs in the brood-chambers with these holes through the top-bars securely and hermetically sealed by the bees with wax. When friend Bordon tries out his idea he will find that the bees will wax up the openings, and I imagine he will decide that other ways to provide the winter passage are better.

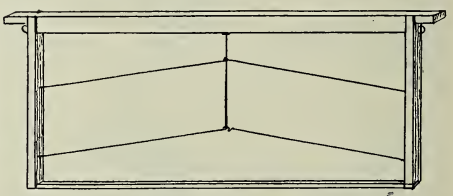
Another method that S. T. Pettit had in making winter passages was to bore through all the combs of the brood-chamber in one operation by means of an iron rod heated in a kettle of boiling water. One of my earliest recollections is having to sit beside the hive, holding a form while he bored through with this instrument. Holes were placed in the sides of the hive and kept plugged except when the combs were to be bored out the last thing before the bees went into winter quarters.

I do not think that any thing will take the place of the Hill device or some similar arrangement which gives a passage across the top-bars.

Guelph, Canada, Dec. 28. MORLEY PETTIT.

Plan for Fastening Foundation

I notice in GLEANINGS, 1913, page 799, H. H. Root's plan for fastening foundation in frames, which is surely good; but I do not understand why he wants the lower wire to curve upward. Here in Texas we use two wires where four holes are already punched. We put one wire in the second hole from the top and the other in the fourth hole, as



shown in the diagram, and then with short pieces of wire wrap one end two or three times around a tack and drive it about the middle of the top-bar. We pull the horizontal wire tight in the middle and wrap the wire around. Next we tighten the second wire and wrap the end of the short wire around it. It surely will not sag nor buckle. Instead of a tack we sometimes wrap the wire around the top-bar.

Angelita, Texas. J. S. WHITE.

Who Should Worry over the Net-weight Law?

I have just read with considerable interest the editorial, page 921, Dec. 1, on the net-weight law as applied to comb honey. My inference is that it would make no difference whether the section was weighed in or out. A practical beekeeper or honey jobber isn't going to mark the *exact* weight on each comb, is he? Is it necessary to mark the maximum weight on each section of honey? Why not grade the honey as formerly, and, when cased, stamp each section alike with the minimum weight, say 10 or 12 or 14 oz.? Suppose there was not a section in the 10-oz. case that weighed less than 14 ounces. Whose business would it be if we gave the customer 4 ounces more honey?

I spent three weeks recently selling extracted honey to dealers in eastern North Dakota and western Minnesota. I had the opportunity of seeing several hundred cases of comb honey in the hands of dealers there, and I gave it some attention. One producer marked with a pencil; some more had "not less than 12 oz;" but the concern that supplied most of the comb honey in this section had each comb stamped the same, "Not less than 10 oz."

If this fills the letter of the law, why worry over the weight? This was all nice honey, and probably weighed 14 or more ounces, with a few exceptions. Now and then a case had some thin combs, probably 11 oz. Under our standard grading we would grade this out; but under this plan of weighing we would not need to. This net-weight law is supposed

to be something for the consumer, is it not? In this particular case it would look as though these law-makers had handed us another chestnut.

Smithland, Ia. B. A. ALDRICH.

Massachusetts Meeting

The recently organized Massachusetts Society of Beekeepers held its monthly meeting on Saturday, Dec. 19, at 28 School St., Boston. The speaker was Hon. George F. French, of the Federal Department of Agriculture, Washington, D. C., who spoke on the profits Massachusetts has in honey production. The speaker brought out how the beekeepers could bring Massachusetts to the front line as a honey-producing section.

Ten new names were added to the membership list. The next meeting will be held in January at the call of the secretary.

Rutland, Mass., Dec. 23. P. D. HANSON, Sec.

Treating Foul Brood in the Winter

We have two colonies of bees that we think have foul brood. They cannot be treated now. What can we do to save the bees over winter?

Massillon, Ohio. F. G. KAUFMAN.

[The only thing that you can do is to see to it that they have plenty of stores to carry them through, and that they are comfortably packed. Treatment should be given as soon as settled warm weather sets in. If they were bad with foul brood last fall it is very probable that they will die out before spring. Care should be exercised that the honey be not robbed out by healthy colonies during the first flying days.—ED.]

Queens above Excluder

Having noticed of late that several writers for bee-journals have been discussing the raising of queens above an excluder, without arriving at a settled opinion as to the advisability of doing so, I venture to offer my opinion.

A young queen can be reared and fertilized in the second story above the excluder in a strong colony. But, *don't do it.* It does not pay for the trouble. There are too many frames and bees to hunt over; and if by any means you fail to find it at the right time it will take twenty to thirty pounds of honey out of the crop—enough to buy two or three queens without the trouble. I sometimes put a frame of young brood in such a colony, but take care of the queen-cells before the young queens emerge.

La Valle, Wis., Dec. 9. W. L. ROBERTS.

Push-in-Comb Plan of Introducing Commended

Responding to the invitation, page 923, Dec. 1, I wish to add my mite in favor of the push-in-the-comb-cage plan of introducing queens. I have practiced this plan this year, and every year for the last eighteen years. I always recommend this plan to my customers when they ask me for an infallible method of introduction, and I have yet to know or hear of a single failure where this method was used.

I always recommend to my customers that they leave the hive severely alone for a whole week after introducing the queen this way, to give her a chance to get to laying before the bees are disturbed again, as any queen is liable to be balled if disturbed before she gets to laying. I also recommend that the cage be so placed as to include some honey, some hatching bees, and some empty cells for the queen to begin laying in. I do not care whether there are any larvæ enclosed or not.

The only objection I see to sending out instructions to use the push-in-the-comb-cage plan, besides the objection you mention, is that it is more trouble to make the cages than the average beekeeper will take. Sometimes we have orders for 25, 50, or 100 queens. It would be quite a little trouble to make up so many cages; and often the beeman has not the wire cloth handy to make them. Perhaps it is fifteen or twenty miles to the nearest store where the wire cloth can be obtained. In that case the man may be without any information as to how to introduce. Shall we send the wire cloth with the queens?

I have tried the smoke method of introduction. Usually it works. Sometimes it does not, and I don't see why.

Mathis, Texas. H. D. MURRY.

Would See Farmers Keep Bees

In reference to the experiences of J. S. Miles, page 946, Dec. 1, I will say that I see the matter altogether differently. First, the farmer has a right to try his hand at beekeeping, whether for success or failure, and he creates a demand for bee-supplies as well as for honey. For example, last week I sold five gallons of honey to a Mr. Owens to feed his bees, as he had had an off year. Now, Mr. Owens never would have bought five gallons of honey had he not been in the business. The past two years Mr. Owens got considerable honey and sold some to his neighbors, who this year also came to me. He has worked up a market by educating the people to know that honey is pure as well as very healthful, and he had told his neighbors that my honey was pure, and sent them to me. I have sold him the bees and the hive at a small profit. The honey that was gathered would have gone to waste.

Give the farmer a little reading on bees, and tell him by all means to get the good bee-books for information. Give him one about hives and show him how to use foundation, and how to put up honey. Only by attempting the work blindly can real disaster and discouragement result.

Palmetto, Fla. C. H. CLUTE.

Wires Preferred to Splints

P. S. Reaves, page 942, Dec. 1, describes the trouble just as it is here. My bees began to die in the latter part of August. I would find 50 to 150 dead bees, mostly young but perfect, on the alighting-board every morning. At first only one hive was affected; later, others. We had very dry weather here through July and August, and more honey-dew was stored than I ever saw before. Other beekeepers here had the same trouble. It cannot be poison nor any thing gathered; for, if so, all the colonies would be similarly affected. Do you not think so? About one-third of my colonies had the trouble. Nothing that I could find upon examination caused the dying, some having little honey and some plenty.

I have tried the Miller splints to my (dis)satisfaction. Hereafter I shall stick to wiring full sheets. I tried, the past summer, a few frames without grooves or comb-guides or wedges.

I placed the top wire ½ inch below the top-bar; and when fastening foundation I pulled the wire lower ¼ or ½ inch in the center, the second wire the same (as described in instructions sent with foundation). This forces the foundation up against the top-bar, and in every instance the bees fastened it nicely. These frames were put in between built-out combs. Next season I will try with swarms.

Asheville, N. C., Dec. 14. O. BROMFIELD.

More about that Mysterious Trouble

In reply to P. S. Reaves, Princeton, W. Va., page 942, Dec. 1, I will say I have the same trouble he has. I have 26 colonies of bees, and went through them two weeks ago and found honey enough for

the winter, but no brood in any of them. Only a small quantity of bees were living, and they are still dying by the handful. I don't think I shall have a colony left for spring. My apiary is located in the back yard of my lot in the middle of our city, and I have been only five years in the business.

We had such a drouth in this section that there were no blooms for the bees to work upon until late in the fall. There were enough for them to lay up for winter.

East Radford, Va., Dec. 9. R. H. CREASY.

Farmers' Insurance Co. Insures Bees against Fire Loss

I have read the letter of inquiry about bee insurance, page 956, Dec. 1, and your answer that you have been informed that no company will insure bees against loss by fire. We have 170 stands of bees insured for $400 against fire and lightning, in storage and out, by the Farmers' Insurance Co., Cedar Rapids, Ia. The liability is $3.00 per stand in case of loss. There was no trouble about getting it. The agent wrote in for instructions, and permission was given at once.

Turkey River, Ia. L. W. MAXWELL.

Retail Your Own Honey

There is one method of marketing honey that is rarely mentioned in any bee-journal, and I beg to suggest that it be discussed in GLEANINGS in 1915 —that is, the bottling and selling of extracted honey by the producer. Go into groceries where you will, and you see bottles and jars of honey on the shelves. On closer examination you will see "This honey was put up by —— Packing Co., or "Bottled by —— Bottling Co." Why cannot beekeepers supply their local grocers at least, or retail it to the consumers in the nearby towns themselves?

Some beekeepers object, saying that they have not the time to bottle honey; but I know that there must be scores like myself who have but little to do in winter, and many no doubt have a heated workshop or honey-house where the work may be carried on. Surely there must be some who bottle and sell part of their honey in small packages, and I am sure they will be willing to give others some hints on the subject, such as best methods of bottling, selling, etc., and best size of bottle to use.

Every beekeeper who retails his honey should be prepared to furnish honey in any form his customer desires it. Thus, if he produces comb honey only I believe it would pay him to purchase extracted honey from a producer of that article, or exchange with him and *vice versa*. Beekeepers cannot give too much study to the selling of their honey.

Catskill, N. Y., Dec. 28. ELMER W. PALMER.

Beekeepers near Akron, N. Y., Organize

We held our meeting at Akron, N. Y., Dec. 15. The day was rather stormy, and the crowd was not as large as would have been the case had the weather allowed. Those present had an interesting time discussing timely topics.

One member has a trying time every year keeping pollen out of his sections. At first thought it would seem this is a question of carelessness, but not so, as Mr. Sprout is an intelligent beekeeper and not to be misled so easily. He says it bothers him every year from the beginning of the clover flow to the end, in colonies before swarming and after. Young and old seem to make no difference. He uses a frame nearly 12 inches in depth, and hives his swarms on two empty combs, and does not put on supers immediately, but still the trouble is there. If he puts an empty super under a partly filled one, in goes the pollen and sometimes on top. He has tried almost every thing conceivable, even putting drone foundation in sections, but of no avail. Can any of the readers offer a remedy?

A local organization was formed with the following officers: President, John N. DeMuth, Pembroke, N. Y.; Vice-pres., J. Roy Lincoln, Niagara Falls, N. Y.; Sec'y-Treas., William Vollmer, Akron, N. Y.

A summer field meeting was also decided upon.

Akron, N. Y. WILLIAM VOLLMER, Sec.

[Bees are creatures of habit and they must not be allowed to get the habit of placing pollen in the sections. We presume that Mr. Sprout recognizes this fact and that he has done all in his power to prevent them from doing so. An occasional cell of pollen in comb honey seems inevitable, but if there are combs containing some pollen at each side of the brood-chamber with plenty of empty cells for more, the trouble is not likely to be serious.

Some have used a queen-excluder which also serves as a pollen-excluder usually, but if possible the situation should be controlled in some other way.—ED.]

What to do when a Swarm Issues

When running for comb honey, no matter how much room or ventilation is given the colonies, some will swarm. This is my way of treating them. I watch at the entrance for the queen (of course I have the queens clipped); and then I cage her and lay the cage at the entrance of the hive that the bees came from. Then while the swarm is in the air I go through the hive and cut out the queen-cells. At the beginning of the season I put back four or five frames of brood in an eight-frame hive, and fill the rest of the space with full sheets of foundation. At the latter part of the season I put back six or seven frames of brood, filling up with full sheets of foundation. About the time I get through the colony the swarm will return. When the bees are about half in I let the queen run in with them. The brood that is taken away from such colonies is given to weak colonies.

Juda, Wis., Dec. 8. JAMES D. BENSON.

Ames Bottom-board for Four Hives Faulty

The Ames bottom-board, p. 889, Nov. 15, is faulty in this respect: When the colonies are very strong, the weather very hot, and a sudden check occurs in the honey, the bees from the south hives will often get up a nice scrap with their north neighbors, and a lot of dead bees will be the result; then when young queens are mating they too often return to the wrong hive. Now, if he will tack the cleats on the bottom of the hive with short nails so they can be easily removed, he can, when he takes off the winter case, move the hives to the extreme ends of the bottom-board and place a wide shingle on edge next to the north hive, and have things more harmonious. I have been through the mill.

SUBSCRIBER.

A Beekeeper who has not Walked for nearly 40 Years

I am 43 years of age, and I have not walked for nearly 40 years. I was stricken with infantile paralysis in both feet and legs in 1876 when I was five years old, and have never walked since. My feet and legs are very small. I cross my legs by laying one foot on one thigh and the other on the other. I have leather pads filled to put on to crawl on, and also leather slippers, as I call them, for my hands. I am strong in my arms and body, and crawl about my little apiary and shop, which is also my honey-house, and work with my 43 colonies.

When I was 17 years old I crawled half a mile to hive my first swarm.

Woolwine, Va. JESSE G. COCKRAM.

ROBBING SICK PEOPLE; GYMNASTICS IN THE GARDEN, ETC.

I think most of our readers have seen advertisements of wonderful things for the cure of sick or ailing people in the shape of treatment by mail, correspondence schools, and other things along that line. From the very first I have been suspicious of some correspondence schools;* and I have invested money in them in order to find out how they work. I have already mentioned the one for the cure of failing memory. A great doctor made wonderful promises about treating each case individually. I think his price was $20.00 for the whole course. If you did not "bite" at the $20.00 tuition, after a week or two come particular reasons why he has come down to $10.00. If you do not jump at the reduced offer, a few weeks later the price is reduced from $10.00 to $5.00; and I do not know but they come down still lower later on. One of our subscribers bit at the bait, and sent me the whole course of treatment. Instead of its being a personal letter for the particular individual, it was simply a lot of printed sheets that, even if they were of any benefit, could be furnished for 25 cents. There was hardly a new suggestion, nor any thing that has not been known for years.

Some time last spring I saw an advertisement of a course of instruction in massage, or something of that sort. It was a way of developing the muscles wonderfully, accompanied with a picture of a model athlete. As I have been for some time curious about such a treatment I sent for particulars. It did not impress me very favorably, although the writer laid strong emphasis on sending the money back if the customer was not perfectly satisfied. He said Uncle Sam would not *permit* him to use the mails if he did not "make good" all his promises. I hope the above is true; but if it is, it is news to me. Well, I laid his papers aside; but in the course of a month or so he wrote that he had been anxious about my case, and wanted to know why he did not hear from me, offering to cut the price down to $10.00 for an immediate reply. I then wrote that there was no need of sending me any more "form letters;" but if he wanted to send me the treatment, and it proved to be of any benefit to me whatever, I would forward the $10.00, referring him to Dun and Bradstreet for my standing, also mentioning the fact that I did not find *him* quoted at all. For the first time I got a *real letter;* but I *may* have been fooled even then. He said that doctors like himself are not quoted by Dun and Bradstreet, and the only way he did business was to have cash in advance. I supposed this would end the matter; but in a few days came another form letter, skillfully planned, to make it appear like a personal one to myself, saying so many of his friends had told him how much *good* he could do by reducing the price still further he had decided to offer the whole treatment for the next ten days for the ridiculously small sum of $5.00. I especially wanted to see if the money was coming back promptly if I felt I had received no benefit, or if I were not perfectly satisfied with the investment. Now, right here comes in a "kink" that I had not thought of. The full treatment to be gone through with night and morning is for 90 days. Well, my opinion is that the average person would become so tired of the "gymnastics" before the 90 mornings or 90 days were over, that he would be likely to be willing to let his $5.00 go rather than to keep on. The conditions were that you follow the treatment faithfully; and I have enough confidence in humanity to think that there are very few who would declare they had kept it up nights and mornings for 90 days when they had not done so. Regularly every week so far comes a form letter giving additional information. Now comes the question, "Have I not received some benefit?" Yes, I think I have; however, very little of the instruction was new to me. The course of gymnastics in our schools amounts to about the same thing. For a person who is kept in an office all day, and does not have sufficient exercise outdoors, there would, no doubt, be much benefit from it. For instance, one of the latest exercises is to sit down on your toes and then straighten up, say a dozen times or more, providing you do not get *too* tired. This is all right and good; but one who works in a garden has about enough of it in picking strawberries, beans, etc., without having the same thing to do night and morning; and I am inclined to think the vigorous use of a hoe, night and morning, would develop the muscles in the arms about as well as the gymnastics, and something would be *accomplished* instead of just swinging your arms like Don Quixote's windmill. This treatment is certainly far more commendable than the advertisers who doctor with drugs and new-fangled medicines. It cannot do you any harm, even if it does not

* Some are good and are operating on the right lines. With these I have no quarrel.

do you any good; and I have heard it urged that, unless you pay five, ten, or twenty dollars you may not take the pains to carry out the treatment. This may be true; but it is a rather sad reflection on humanity. The principal thing I object to is the practice of having form letters printed in such manner as to appear as having been typewritten. The *Sunday School Times* says deception is *always wrong;* and the Bible says so too, but perhaps not in just so many words. Now, these form letters, skillfully planned to make you believe the great doctor has actually written to you, having nobody else in mind, are, in my opinion, mailed with the purpose to deceive. Several times lately I have carried such letters to our Mr. Boyden, who is an expert along this line, and asked him if the letter in my hand was printed or written; and sometimes it bothers even him to tell. The "A. I. Root, Medina, O.," is unquestionably put on with a typewriter; but the shade of ink agrees so perfectly with the body of the letter that it is hard to determine. While I severely censure this form of deception I am well aware that some of our religious denominations are making use of this scheme.

Some of my friends think I am too severe, and suggest that people will take more pains to read a *letter* than they would a printed leaflet. Even if this is true, I am sure that in the long run it *pays to be strictly honest.* It is well enough to use every honest means to attract attention and to get people to read what you want them to know; but is it not very much better to avoid deception of any kind—to avoid even the *appearance* of evil, as we have it in the good book?

Last, but not least, is it honest to take $20.00 for something you have to sell if you can, then wait a while and start up some excuse for offering the same thing for $5.00 or even less? My oldest granddaughter, who is just now at school in Oberlin, tells me, in talking over the matter, that one of the text-books in their school warns the public against quack doctors who advertise "treatment" for $20.00, then $10.00, then $5.00, and so. Is it *honest* to take $20.00 from unsuspicious and confiding people, and then let others have the same thing for $10.00 or even $5.00?

In conclusion, let me ask once more, are these persons and firms who are attempting to obtain your money by mailing these form letters to you in the manner above set forth any better than pickpockets in general? I think not. Call your family physician (your neighbor and one whom you *know*), when you are ailing, and get his advice. I always tell our doctor I would much rather pay him for *advice* than for medicine. Far better give your money to honest men whom you have known for years than to hand it over to pickpockets.

I forgot to mention that the instruction is to finish up with a sponge bath after each course of gymnastics. Now you can all have the benefit of it, *without* paying twenty, ten, nor even five dollars. Oftentimes I feel too tired to go through my exercises before retiring; but after I have thrashed about and got well warmed up, and perhaps a little tired, and then wind up by rubbing myself with my wet hands all over my body, and getting scrubbed off with a towel, I feel tiptop. In the morning our bathroom is generally a little cold, and oftentimes I feel reluctant about taking a sponge bath. Well, after the exercises it is just fun to wash all over, as I have recently described, then have a good rubbing with a towel. Then I do not mind the cold a bit.

"OXYPATHY" FINALLY GETTING ITS JUST DUES.

See below, clipped from the *Rural* of Nov. 28:

"OXYPATHY" FINALLLY GETTING ITS JUST DUES.

The oxypathor has at last been adjudged a fraud by a court of law. The Federal court at Rutland, Vermont, found the manager of the Oxypathor Company, of Buffalo, N. Y., guilty of using the mails to defraud, and he received a sentence of 18 months in the Federal prison at Atlanta, Ga. This scheme seemed to have been operated by several companies which controlled certain territory. Besides the one in Buffalo there was one in New York city, which was driven out of business some time back by the Vigilance Committee of the Advertising Men's League. There was also one in Chicago, and another operated at one time from some point in Pennsylvania.

The oxypathor is a small box filled with sawdust and some other inert matter. It is provided with a cord at each end; and the patient was to attach one string to his head and the other to his feet. The claims were that this would cause an extra amount of oxygen to be forced into the blood, and that a cure would follow. Doctors and chemists who examined the box and analyzed its contents invariably asserted that the matter was inert, and could have no physical effect whatever on the patient. The cost of the instrument was $35.00. They were sometimes sold under guarantee; but we were never able to get the cash returned. We exposed it several times in the past, but the advertisements appeared quite regularly in papers of high and low degree.

COMING TO FLORIDA TO SPEND THE WINTER, ETC.

As I have been having quite a number of letters of late, similar to the one below, I submit this one with the answer I have penned on a postal card.

A. I. Root:—Having learned through GLEANINGS of your making your home in Florida during the

winter months, and that possibly you have some knowledge of that State, I would ask:

Would you advise a young man to go to Florida to spend the winter?

Which part of the State is best as regards climate? Are the people Christians? Is there any work?

About what would it cost to go and spend a winter there?

I will give you in short some information as to myself. I am twenty-three years old; was raised on the farm, free from any appetite for liquor or tobacco, and can give reference as to my character, such as The Farmers and Merchants Bank, Winchester, Ind., and as many more as you would want.

Winchester, Ind. ALVA O. WEIMER.

I would not on general principles advise a young man to come to Florida now, with a view of getting work. The war has hurt us in two ways—cut off potash for fertilizer, and cut off the market for cotton. The climate is desirable here because there is seldom any killing frost. There is also a large body of nice Christian people here. A trip here and back would cost you toward $50.00, and board toward $1.00 a day. You can, however, rent a room, or even live in a tent, and save a lot. If you have no trouble in getting work where you are, you might be able to find a job here. Handy skilled men are always wanted almost everywhere. A. I. ROOT.

In answering the above I realize most vividly how hard it is to give advice to one we do not know. One who is never at a loss for something to do, and one who delights in helping the *world* along, will find great opportunities here in Florida; but one who depends on some one else to find him a job, and who is for the most part planning only for *self*, had better not come here, or, I almost said, *go anywhere*. He had better stay where his neighbors and relations can look after him. One who is expert in *making things grow*, and who can, by watching experts, learn to get like results, will find this a grand place to work and study. I would, however, advise such a one to have a little money ahead, for he may have to take time and expense before he begins to get returns. Go over my talks in this department for the last four or five years before you start out and you will find it a *good investment*.

HIGH-PRESSURE GARDENING

CASSAVA; NOT ONLY GOOD FOR "CHICKENS" BUT ALSO FOR FOLKS.

A year ago, when we reached our Florida home about Nov. 1, I mentioned asking Wesley how those big spreading trees came right in a prominent place in our garden; and when he replied it was the cassava I could hardly believe all that growth had come from the little sprouts just peeping out of the ground six months before. Well, after giving some of the roots to the chickens I became so enthused that we used all our spare wood for making cuttings; and when we left Florida, the last of April, we had planted two beds, perhaps 200 feet long by about 10 feet wide. I have told you how we sawed up the branches into pieces about as long as corncobs, and placed them close together in a "cutting-bed" until they started to grow. When each one had sent up a little shoot they were planted in the long beds four feet apart, making three rows—one down the middle and one on each side. Well, when we got here again in the fall I had another "happy surprise"—two beautiful *groves* of bright-green thrifty-looking trees with scarcely a failure. One of these beds was on the poorest dry sandy spot we have on the premises, and I told Wesley I felt sure the cassava wouldn't amount to any thing, as we had tried different stuff, and every year it was "no good." He declared, however, cassava did best on poor sandy land, well drained, and there was a deep ditch right close to the fence, for carrying off the storm water. Before setting the plants we did give the bed a little poultry manure and some fertilizer right in the furrow when the cuttings were planted. The little trees soon shaded the ground so that very little cultivation was needed.

About the middle of December I decided to use the bed where my first cassava-trees grew—the ones that had been growing two summers, and told Wesley to give the roots to the chickens and forgot all about it. As he started home at night he was eating something that looked like a big peeled turnip. It was a slice from one of the cassava roots.

"Why, Wesley, is that good to eat raw?"

"Sure! and it is good to eat baked, just as you bake potatoes. Try some and see."

Now, the government bulletin says that, while the two-year-old roots are much larger, they are not as sweet and tender for stock as those of only one summer's growth. I went and looked at the root where Wesley got his "slice," and it was bigger and longer than my leg. I got the ax and supposed it would take quite a blow to sever the root; but the ax went through and down into the ground, as the tuber was so tender and brittle. It took quite a while to bake; but I was rejoiced to find it a nutritious and quite delicious food. Mrs. Root, however, doesn't quite agree with me. She says I always like *any* thing new; and perhaps it *is* true that I always rejoice in finding something I had never come across before in the

way of "God's gifts."* With the ax I cut from the root (it was five inches in diameter and weighed 18 lbs.) several cylinders and stood one on end in the chicken-yard. Passing there half an hour later it had disappeared. I gave them another, and pretty soon the ducks came up from the canal and there was quite a noisy combat as to who had the "best right" to the new delicacy.

Well, if cassava will take the place of corn for ducks, or even partially replace corn, at 35 cts. a dozen for duck eggs (hens' eggs are 45), we shall have a bonanza here in Florida.†

Now, the above isn't *all* of my story. The cassava-tree that had grown two summers had three other roots, for there was a cluster of them, though not as large, and several roots were taken from it when it had grown only one summer. If you want to know more about cassava, send to the Department of Agriculture for a bulletin. See page 280, April 1, 1914, in regard to cassava as a food product.

GOLDEN APPLES AND DELICIOUS APPLES FROM OHIO TO FLORIDA BY PARCEL POST.

Prof. W. J. Green, of the Ohio Experiment Station (a lifetime friend) was kind enough to send us half a peck each of two noted apples by parcel post. When our Ohio station was established in Wayne Co. years ago they took an old run-down orchard and made it a wonderful object-lesson for rising generations. By trimming, fertilizing, and grafting, they have not only made it "a thing of beauty" but it *almost* promises to be "a joy for ever."‡ In the nearby zones such apples by mail may be, without question, a big success. Below is what I wrote friend Green:

Friend Green:—Many thanks for the beautiful apples you have so kindly sent me. They are not only beautiful to look at, but the finest-flavored apples, I do believe, I ever tasted. If the postage were not so much this long distance there would certainly be a great opening for apples by parcel post. The "container" you used brought them in splendid condition. Not an apple was bruised or injured in any way. The "Delicious" apples *you send* are certainly *more* delicious than the samples sent me some time ago by the Stark people in Missouri; and the Grimes Golden, even Mrs. Root admitted were pretty near the best apple she ever tasted. The postage on the Grimes was about 2 cts. on each apple; the Delicious, on account of its size, about 3 cts.

Bradentown, Fla., Dec. 17. A. I. ROOT.

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* Mrs. Root came to me later with a slice of raw cassava and a sprinkling of salt, and she said she was surprised to find it so good.

† After giving the ducks all they wanted we got 9 eggs from 12 ducks next morning.

‡ If I am not mistaken it has been claimed our Ohio hills produce *better-flavored apples* than any of the fancy apples from the far West.

A REAL "DUTCH CHEESE" FROM A REAL "DUTCH FARMER."

I am sure the following will be read with much interest, especially as it comes from a point so near the seat of war:

Mr. A. I. Root:—Your dasheen bulbs came July 22. I am sorry to say that the most of them were rotted. The rest I planted, but they are rotten also in the ground. Notwithstanding this, I thank you very much for your kindly deed, and I am sending to you with this letter a real Dutch cheese, a so-called Edam cheese. I hope you may receive this cheese in good order. I read in GLEANINGS that you like cheese very much, and therefore I wanted you to have a real "Dutch cheese."

We have here in the Old World a bad time; yet Holland is at this time neutral. My wife is gathering gifts here in our village for the poor Belgian children and women who are leaving their country and coming to Holland to save their lives.

I send you a small portrait of myself in order that you may see if I am a *real* "Dutch farmer."

Oosterleek, Netherlands, Oct. 5. P. BALK.

It would seem from the above that it is rather uncertain about getting dasheen bulbs to stand so long a trip. The cheese, however, came to hand by mail in perfect order; and if it were not for the fact that *Mrs. Root* objects, I think I should say it is "the nicest cheese I ever tasted." I do not believe we make any thing equal to it here in America, and I fear we do not often get from the old country any thing equal to this sample. May God bless the good wife and all other good wives, wherever they live, in their efforts to give at least a little help to the poor suffering Belgian women and children

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SWEET CLOVER, AND WHAT IT IS DOING FOR A MOUNTAIN-RANCH FARMER.

We clip the following from the *Country Gentleman* of December 26, 1914:

On a farm at the foot of a mountain one must expect to find some rough land. Rush has forty acres to be so classed. It is sharply sloping land, somewhat rocky, cut by gullies, and, in spite of all his efforts, overlaid after freshets with rocky streaks. He determined to put this stretch into alfalfa.

Being ignorant of bacterial re-enforcement of his seed he did not secure a good stand. His alfalfa plants were individually strong enough, but they were far apart in location and endowed with a perversity to creep along on the ground. They did well enough for limited pasturage, but furnished not even one cutting of hay.

"The spring following planting I discovered in the middle of my alfalfa patch a strange growth," he told me. "I did not know what it was. I did not know whence it came. It looked like alfalfa, although of rounder leaf and a lighter green. The seed, I concluded, had smuggled itself into my pur-

chased bag. The plant throve when the alfalfa all about it was blighted or afflicted with the 'yellows.' I determined to let it grow. I would see what would come of it.

"The next year quite a patch of this plant appeared in my field. This was a very dry year, but this patch remained green the year through. I decided to have the plant classified for me. 'Sweet clover!' I knew of the existence of such a pest. I was for rooting it out, smiting it hip and thigh. But I observed that my saddle pony was not above eating it. I did not have any very high opinion of that animal. I did not care particularly what became of him. If he was poisoned or bloated by the sweet clover I was prepared to take the affliction with equanimity.

"He throve on it. He preferred it even to alfalfa. This gave me an idea. Perhaps I could teach my other animals to like it. I succeeded. The sweet clover covered the patch of forty acres. As you see, I have so much of it that I can hardly keep it cut and stacked. It makes excellent pasturage and good hay. I cut and cure it precisely as one would deal with alfalfa. I do not have to irrigate it. Thus I save for other things what water I have. It holds my soil from washing away. It appears to thrive best of all among the rocks that have tumbled down the mountain-side.

"To me the best thing about it is its action on alfalfa and alfalfa's reaction on it. Sweet clover strengthens alfalfa. It prepares the ground for alfalfa. In a pasture made up of about equal parts of sweet clover and alfalfa one may safely let his cows and sheep roam. The coumarin in the clover prevents bloating by the alfalfa. Moreover, when I was teaching my stock to eat the clover I fed the alfalfa with it. They would devour the alfalfa greedily, of course, and now and again would come upon a bunch of the clover. Thus they acquired the taste. Now they will sometimes thrust aside the alfalfa to get at the clover.

"And I have discovered another thing: If one has a good stand of alfalfa, that is just the chance for one to get a good stand of sweet clover. The one inoculates the other. The reverse is true as well. One may secure a good stand of alfalfa on a field where sweet clover has grown even sparsely. This despised plant thus became to me a blessing. Again I learned the benefit to a farmer of just making the best of the thing nearest at hand."

TEMPERANCE

"THE CASE AGAINST THE LITTLE WHITE SLAVER," THE AMERICAN TOBACCO CO., ETC.

I presume every one who reads knows somewhat of the stand Edison and Ford* have taken in regard to the use of cigarettes among their employees; and perhaps many have also seen what the American Tobacco Co. has said in defense of cigarettes. The matter has called up so much interest that Mr. Ford has sent out a pamphlet of toward 40 pages from which I make the following extracts:

MR. EDISON'S LETTER

FROM THE LABORATORY OF THOMAS A. EDISON, ORANGE, N. J., APRIL 26, 1914.

Friend Ford:—The injurious agent in cigarettes comes principally from the burning paper wrapper. The substance thereby formed is called "acrolein." It has a violent action on the nerve centers, producing degeneration of the cells of the brain, which is quite rapid among boys. Unlike most narcotics this degeneration is permanent and uncontrollable. I employ no person who smokes cigarettes.

THOS. A. EDISON.

Below we give part of a paragraph from a long letter from the president of the American Tobacco Co.:

Unquestionably the cigarette is the favorite smoke of doctors in every city and large town throughout the country. Preachers, lawyers, bankers, business men, laboring men, and men of all classes have deliberately turned from cigar and pipe to the cigarette. Inasmuch as ten to twelve million American men use cigarettes, and perhaps even a larger percentage of Europeans, your charge of feeble-mindedness lies against an overwhelming proportion of the commercial, professional, artistic, musical, and industrial world.

* Henry Ford now occupies the unique position of being at the head of the largest manufacturing institution of any kind in the world. What a wonderful opportunity he has for philanthropic and reform work of this very kind! We may be thankful that he is the kind of man that he apparently is.

May God help the people, especially the boys, who belong to or even *attend* a church where the *minister* uses cigarettes. Does any one know of such a minister? I fear it may be true of some *doctors* and perhaps lawyers; but I am sure, if so, they are already beginning to see what this age demands of a medical and legal adviser.

Below is a part of the reply to the American Tobacco Co.:

I also call your attention to the statement of one of the magistrates in your city (New York) who states that 99 per cent of the boys between the ages of 10 and 17 who come before him charged with crime have their fingers disfigured by cigarette stains.

If, as your letter indicates, scientists and others have thus far failed to find any injurious element in the cigarette, then we must laud Mr. Edison for being the first man to find the reason for the degenerative effect of cigarette-smoking.

I doubt very much the statement you make in your letter that the popularity of the cigarette is possible only because millions of American men have convinced themselves that cigarettes are good for them, and would, therefore, ask you to point out what beneficial result has ever been experienced by any one through indulgence in this habit.

It would appear that the statements contained in your letter are not of such a nature as to be for the benefit and uplift of our wayward lads; and in justice to the American youth who knows not what permanent injury accompanies this habit, this growing evil should be combated.

E. G. LIEBOLD,
Secretary to Henry Ford.

Perhaps I should mention here that, during the past summer, Prof. Wiley spoke at our Medina Chautauqua. Well, after his talk it was the privilege of the Root Co. to entertain him a couple of hours or more. I had a long talk with him about medical frauds of all kinds, water-witching, etc. I mention this as some our readers have

suggested that may be I was not in touch or up to date in regard to all new inventions, discoveries, etc., all the while coming out. And let me also mention right here that Dr. Wiley said the American Medical Association (from whom I have so often quoted in exposing harmful so-called "medicines") is the best and wisest authority in our land.

Here is what the Ford people say of Dr. Wiley:

When Dr. Harvey W. Wiley was chief of the Federal Bureau of Chemistry at Washington he had impure food and drug manufacturers on the run all the time. He is unquestionably the leading health and food authority in the United States to-day. Would you know his opinion of the cigarette?

Here is what Dr. Wiley says of cigarettes:

"I commend Mr. Ford, Mr. Edison, and all people who join them in efforts to curtail or restrict, obliterate, or destroy the pernicious habit of cigarette-smoking. The use of cigarettes is making inroads on the strength of the nerves of all who smoke them, especially boys of tender years, or women who smoke them because they think that the practice is smart. The effect may not be so bad on people of more mature years; but not in any case, no matter how old a man or woman, is smoking helpful. Besides constituting a nuisance, the financial strain connected with use of tobaco stands between millions of people and home comforts."

Below are some more from the best authorities of the present age.

CONNIE MACK SPEAKS.

The boy who does not know of Connie Mack is not old enough to read the newspapers and take an interest in baseball. As leader of the Philadelphia Athletics, Connie Mack takes rank as one of the greatest generals baseball has ever known. He reads men and boys as an ordinary person reads a book. He contributes to the *Scientific Temperance Journal* this characteristically clear statement:

"It is my candid opinion, and I have watched very closely the last twelve years or more, that boys at the age of ten to fifteen who have continued smoking cigarettes do not as a rule amount to any thing. They are unfitted in every way for any kind of work where brains are needed. No boy or man can expect to succeed in this world to a high position and continue the use of cigarettes."

CIGARETTE IS ONE OF THE WORST HABITS.

Hon. Benjamin B. Lindsay is judge of the Juvenile Court in Denver, Colorado, where are handled the cases of boys and girls who have gone wrong. He is often referred to as "the golden-rule judge" because of his kindness, and the deep interest he takes in boys and girls. In telling "What I Have Seen of Cigarettes," Judge Lindsay says in part:

"One of the very worst habits of boyhood is the cigarette habit. This has long been recognized by all the judges of the courts who deal with young criminals, and especially by judges of police courts, before whom pass thousands of men every year who are addicted to intemperate habits. These judges know that in nearly every case the drunken sots who appear before them, a disgrace to their parents, themselves, and the State, began as boys smoking cigarettes. One bad habit led to another. The nicotine and poison in the cigarette created an appetite for alcoholic drink. The cigarette habit not only had a grip upon them in boyhood, but it invited all the other demons of habit to come in and add to the degradation that the cigarette began."

HUDSON MAXIM ON THE CIGARETTE.

Hudson Maxim has won world renown as the inventor of high explosives for use in battleship guns and torpedoes and for various other purposes. He comes out squarely against the cigarette in this fashion:

"The wreath of cigarette smoke which curls about the head of the growing lad holds his brain in an iron grip which prevents it from growing and his mind from developing just as surely as the iron shoe does the foot of the Chinese girl.

"In the terrible struggle for survival against the deadly cigarette smoke, development and growth are sacrificed by nature, which in the fight for very life itself must yield up every vital luxury such as healthy body growth and growth of brain and mind.

"If all boys could be made to know that with every breath of cigarette smoke they inhale imbecility and exhale manhood; that they are tapping their arteries as surely and letting their life's blood out as truly as though their veins and arteries were severed, and that the cigarette is a maker of invalids, criminals, and fools—not men—it ought to deter them some. The yellow finger stain is an emblem of deeper degradation and enslavement than the ball and chain."

In closing let me call attention to the self-evident fact that the Tobacco Co., like the brewers and distillers, has no object in life, no motive for living, other than to *"make money, more money,"* while our good men and women are, with scarcely a *thought* of self, giving their lives for the uplifting of humanity, especially our growing boys and girls.

"RENDERS INFERIOR SERVICE."

That is what the great railroad company, the Baltimore and Ohio, says of its employes who use tobacco while at work. See below, taken from Medina *Gazette:*

The B. & O. R. R. Co. has placed the use of tobacco by station employes and others who come in contact with the public under ban during working hours. The railroad company does not seek to restrict the use of tobacco by its employes when off duty. But it is believed by the management that a man using tobacco while at work renders inferior service, to say the least; and aside from the time lost in "lighting up" there is a certain class of people to whom exhaled tobacco smoke is objectionable.

Another great railway company has said: "No employe need expect promotion who uses tobacco while at work."

"TAGGING THE SOULS OF MEN FOR PERDITION."

The Bradentown *Evening Journal* says:

Dispatches announce the fact that a Columbus, Ohio, brewery, a twelve-million-dollar corporation, went into the hands of receivers of the Federal Court. The dispatch carried the laconic statement: "The decreased beer demand and the adverse legislation in many dry States is given as the cause."

It scarcely would be becoming in citizens who manifest a pride in the industrial development of the country to rejoice in the failure of an enterprise of large proportions which is engaged in its legitimate work of tagging the souls of men for perdition; but those who look hopefully forward to the time when this shall be a saloonless nation cannot but note with satisfaction that the liquor business is growing less alluring year by year.